# amateur radio action

July 1994

Oceania's Amateur Magazine

$3.75*

## *Reviewing the:*
## Kenwood TS-60S *and* IC-2340 Dual bander

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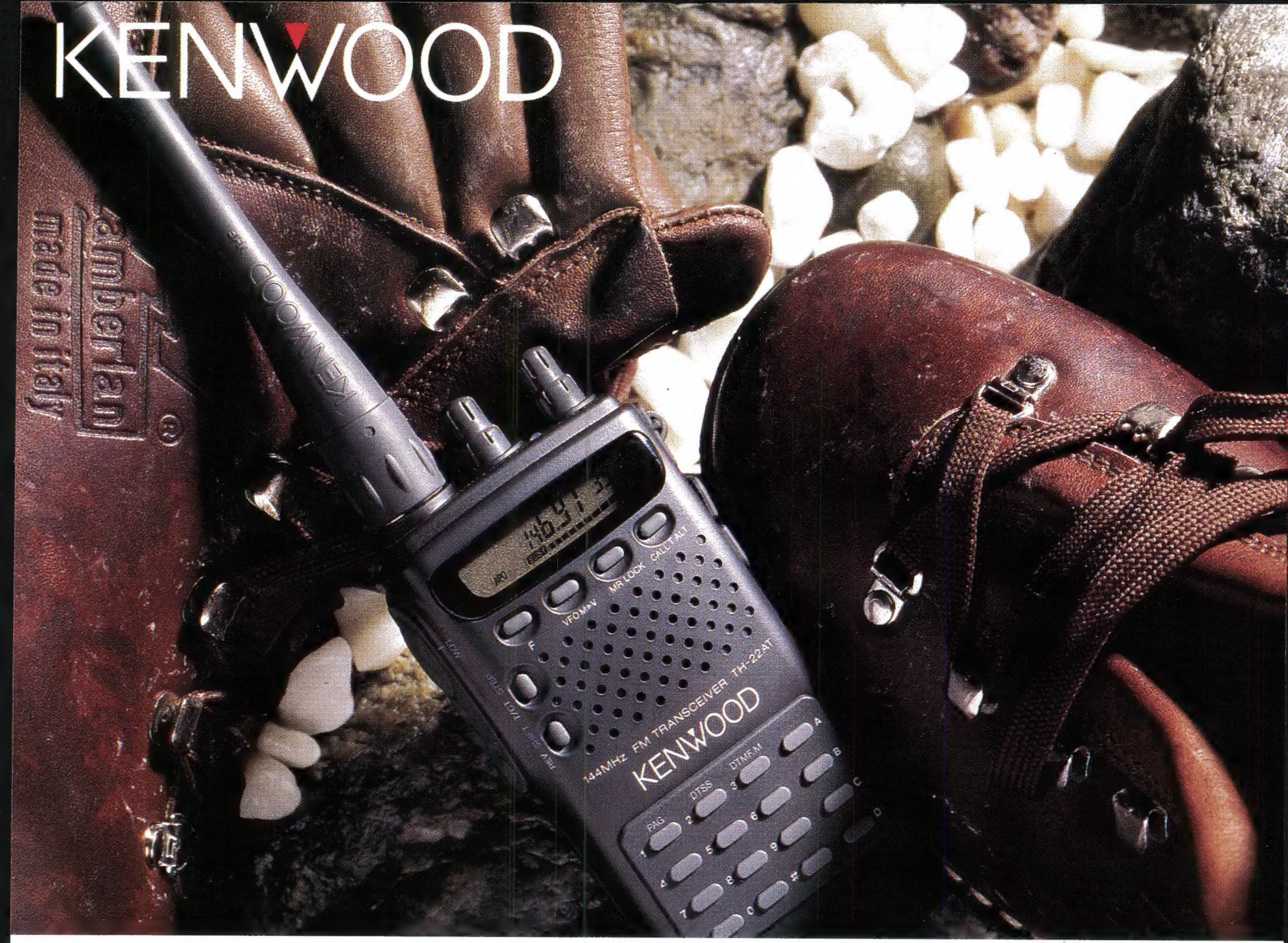
*In this issue...*

- KPC-3 — baby TNC
- Packet user authentication
- Year 2000 — no more amateurs?
- Quad or Yagi — which is best?
- 12v power supply for Smart CW
- Contesting — how, why and when...
- plus all the usual columns



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**July Issue** **On Sale: 28 June, 1994**

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***IN THE NEXT ISSUE (maybe): The annual "new release" season is well upon us and next month we review two newcomers from Kenwood (due for August on sale) and an already available unit from Alinco. We also hope to run a review on a couple of ATUs and a top-quality Australian built power supply. There's a DIY 2m mobile antenna, the first of a two-parter on vertical antenna performance...plus a whole lot more.***

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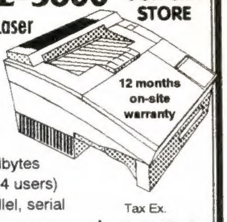

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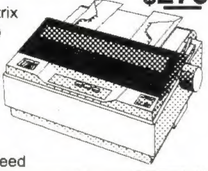

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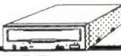

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# EDITORIAL

## PACKET AUTHENTICATION

The authentication of packet users has become a very hot issue during the past couple of months - sparked no doubt by the recent court decision awarding $40,000 to a West Australian person for defamation over material published on an electronic mail system.

Our law commentator "Judious Rex" had a bit to say on the matter in our June issue and a number of bulletins have appeared on PBBSs (Packet Bulletin Board System) since then.

One of the major problems facing PBBS operators is of course identifying the sender (posting) of mail arriving on a packet board.

It is ridiculously easy to place mail on a PBBS over someone else's callsign and, should such mail be defamatory, it is quite possible that the completely innocent PBBS system operator may find himself in deep trouble for allowing the offending mail (message) to be read from his PBBS - even though he may not have even sighted the defamatory message himself.

Elsewhere in this issue you will find an article on "user authentication" and if you are a packet user you will do well to read it.

As a follow up, we will run details of an "authentication package" currently in use in our next issue.

What the real worry is, however, is that amateurs are prepared to play these dangerous sort of games in the first place.

Like it or not, amateurs are indeed a very privileged class.

They have communication privileges only dreamt of by major business corporations and the actions of a few irresponsibles could jeopardise not only packet, but the "whole shooting match".

Portions of the spectrum are already up for sale in Australia and, as you can read in this issue's Newsdesk pages, the same is happening in America.

It is relatively certain that the SMA is not terribly impressed with the ongoing VK2 debacle and the misuse of packet radio can only add to the department's doubtful opinion of amateurs in general.

Over the past 12 months there has been dozens of blatantly defamatory messages appearing on packet.

Most of it originated in VK2 but there have been the odd few from virtually all other states which must surely indicate to the SMA that amateurs are abusing their privileges.

Some of these defamations have been so vicious that had they appeared in a daily newspaper the defamed person would be looking at an early, and luxurious, retirement with the proceeds of the court action.

Amateur self regulation is the way to go and it is well past time that the WIA (referred to in an article elsewhere as a toothless tiger) got serious about policing the bands - and packet radio is the place to start.

If amateurs cannot be trusted to post mail over their own callsign rather than someone else's, authentication becomes necessary and the WIA just _has_ to act now.

## NO AMATEURS IN THE YEAR 2000?

The perennial old favourite "amateurs - where to now..." is back with us again, but this time with a twist.

The author, who wishes to remain anonymous for personal reasons, presents a picture of world-wide, real-time, communications by almost anyone - and they certainly aren't amateurs.

The unpleasant truth of the article is that he just *might* be right.

Sure, it is a "tad over the top", but it is no more an outrageous fantasy than the thought of a few years back that a Rugby League "State of Origin" game would be played at the MCG - and in front of an 80,000 crowd - was a fantasy.

Times are certainly changing - *but is amateur radio changing with it...*

amateur radio action

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Bonus DICK SMITH ELECTRONICS CATALOGUE
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June 1994
Oceania's Amateur Magazine
LATE EXTRA
Reviews:
Yaesu FT-11R, Kenwood TH-22A

# NEWSDESK

## NEW REGULATIONS TO BE FINALISED BY YEAR'S END?

The long-awaited new regulations for the amateur radio service in Australia look like being completed by the end of the year.

This was the hope expressed by Spectrum Management Agency representative Peter Stackpole who was the guest speaker at the WIA Federal Annual Convention dinner on 30 April.

He was standing in for the acting Spectrum Manager, Christine Goode, who sent her apologies.

Mr Stackpole explained the delay in introducing the new regulations had been caused primarily by the restructuring of the former Department of Transport and Communications, now the SMA.

The new regulations were first publicly foreshadowed nearly 18 months ago.

The main aim of redrafting the regulations has been to simplify the present licensing conditions.

The new regulations are still expected to include the introduction of a no-code Novice licence and review of the frequency allocations and privileges for the Limited, Combined and Novice Licences.

A further bit of cautious good news for amateurs was delivered by Mr Stackpole: the SMA has proposed an electromagnetic compatibility (EMC) framework for Australia.

This means that there will be mandatory standards introduced for all electrical and electronic equipment that emits radio frequency energy which is not part of its purpose.

Examples include electric motor driven appliances such as drills and food processors, and other equipment such as personal computers.

The electromagnetic compatibility requirements are planned to be effected from January 1996, but will not be retrospective.

That is, equipment manufactured before that date will not have to comply.

The EMC framework is proposed to apply for all equipment manufactured in or imported into Australia.

The SMA will also work to develop immunity standards for equipment likely to be affected by electromagnetic interference. This will apply to equipment such as domestic television receivers and video recorders, for example.

Mr Stackpole also reminded WIA delegates and guests at the dinner about the SMA decision to toughen interference regulations.

The SMA plans to include in the regulations new provisions relating to the operation of amateur stations in regards to interference.

He said these provisions are being proposed to encourage radio amateurs to take more responsibility in the resolution of interference caused by their transmissions.

The philosophy behind the SMA's thinking is that radio amateurs and those suffering interference must work together to resolve interference problems.

In a cautionary note for the amateur service, Mr Stackpole warned that, just because an amateur transmission is spectrally clean, will not in the future be a defence in cases where interference is being suffered by a neighbour.

Sheer field strength can be a contributory cause to interference and this is likely to become an issue.

Guidelines for resolving interference problems will be developed.

Of necessity, this summary of important points from Mr Stackpole's speech has been brief. WIA Federal is actively considering many of the points raised and we will bring you further information as it comes to hand.

*(Above is courtesy of the WIA.)*

## 2300 MHZ COMMENTS

The FCC has issued a Notice of Inquiry on the reallocation of spectrum from federal government use and has designated the proceeding as ET Docket 94-32.

If approved, some 50 MHz of band space would be transferred to private sector use, possibly as early as this summer. The reallocation is called for under the Omnibus Reconciliation Act of 1993.

It requires the Department of Commerce to identify 200 MHz of spectrum below 5 GHz to be reallocated within the next 15 years.

The spectrum recognized for immediate reallocation is at 2390 to 2400 MHz, 2402 to 2417 MHz, and 4660 to 4685 MHz.

Amateurs share the first two ranges.

The Commission said that there are a number of factors associated with existing allocations of the bands that will affect their potential for private sector use.

It is specifically asking for input on whether the proposed reallocations would adversely affect amateur operations, especially amateur satellites.

The Commission says that the Department of Commerce expects that the amateur service community can satisfy the majority of its spectrum requirements in the remaining 35 MHz left after the proposed reallocation.

It also believes that current use of the 13 cm band by amateur stations is light compared to use of bands lower in the spectrum, but it notes that use may increase for amateur-satellite, high-speed computer data links, amateur TV, and other wideband applications.

The Department of Commerce says that it excluded the 2400-2402 MHz band from consideration for reallocation in order to protect existing amateur satellite operations.

## AMSAT-UNITED KINGDOM COLLOQUIUM

From overseas comes word that the ninth AMSAT-UK Colloquium will be held July 28th to the 31st at the University of Surrey in Guildford, in Surrey, England. This year's meeting will be divided into four primary topic areas.

These are Spacecraft Engineering, Future Space Missions, Groundstation and Spacecraft Operations and Associated Amateur Space Activities.

The Colloquium is the largest international gathering of amateur satellite enthusiasts and experts in the world.

It has established a high standard of quality presentations on topics relevant to the amateur satellite community.

Organizers of this year's event would welcome all contributions of program material covering the vast scope of the amateur satellite program as it exists in 1994.

Presentation abstracts should be sent to:

*Doug Loughmiller, G0SYX, AMSAT-UK Colloquium Programme Chairman, University of Surrey, Centre for Satellite Engineering Research, Guildford, Surrey. The postal code is GU2 5XH in England.*

## FCC TO HOLD SPECTRUM AUCTIONS THIS YEAR - SIGN OF THE TIMES?

The U.S. radio spectrum is now officially up for sale. At least a part of it is, according to Federal Communications Commission Chairman Reed Hundt.

Hundt says that his regulatory agency will hold frequency spectrum auctions this summer and fall.

The frequencies up for grabs are to be used to expand mobile communications.

The FCC Chairman says that this emerging industry has the potential to become one of the biggest in the United States with an estimated 87 million customers or more by the end of the century.

In a related matter, Chairman Hundt told the Washington Post that he wants the FCC to promote competition in the communications industry, especially for cable TV.

In that way he says the agency could

eliminate rate regulation almost entirely. At this time the auctioning of spectrum by the FCC does not appear to hold the potential to impact on ham radio. But with the ham bands considered a valuable commodity by many non-amateur business interests, this is a situation that will have to be watched carefully for the future.

### RUSSIAN MAIL THIEVES

If you have been waiting a long time for a QSL from Russia and have not received it, this might be the reason. According to Ed Kritsky, NT2X, a recent article in a Russian newspaper has announced arrest of several alleged mail thieves at Moscow's Central Post Office.

Four suspects would pick up mail at Sheremetyevo International airport near Moscow then drive their trucks to a near-by woods.

There they reportedly opened the bags and rip envelopes open, seeking valuable enclosures such as foreign currencies and IRCs.

The piles of torn envelopes were then dumped on the spot, as trash. The four were caught only when they became careless and started opening mail at the Post Office warehouse.

The newspaper report says that Russian Postal Service security people was helpless to combat the thievery. In fact, they pretty much missed the whole thing.

So you might want to mail out another QSL in case its been over a year since you sent the last one.

### ATN ANTENNAS

The name ATN Antennas has become synonymous with high-quality beam antennas for the radio amateur — its log periodic systems being particularly well-known among the fraternity.

The rebuilt company (since its 1987 fire) is now fully operational and expanding.

There are some features of this Birchip manufacturer of fine wares which may not be well known to some. Antenna systems including its latest wire arrays, and even its most enormous log antenna systems are being exported to 41 countries around the world.

Such critical bodies as the Red Cross are choosing Ray Naughton's antennas in preference to overseas gear because of their extreme reliability, durability and performance.

Recent additions to the ATN range include all-aluminium towers which, by virtue of light weight, strength and electrical conductivity, are highly sought-after by commercial broadcasters around the world.

You see, modular towers transport easily — Ray's latest batch made it into deepest Africa via various odd transport modes including light aircraft.

Apart from finding out about his company's expanded antenna range, ask Ray about his power transistors, output valves (at true bargain prices), satellite assemblies, 'Create' rotators, antenna analysers and, as the pinnacle of the 'what's new' list, inquire about his latest aluminium towers designed especially for the radio amateur.

Amateur Radio Action will be following the trail to Birchip very soon to bring you up to date on these!

### SLOW CODE

Slow-code, the name given to an American Amateur Radio Industry Group proposal to lower the General class code speed requirement to 10 words per minute is gaining far more support than criticism in ham radio circles.

Most of the packet radio postings on slow-code have praised the industry groups leadership in this area. Some even say that the proposed lowering of the code speed does not go anywhere far enough with five words per minute being suggested instead.

Hams who favor the five words per minute morse code say that this will allow some sixty to seventy thousand technician class operators, licensed prior to the Novice Enhancement action of the mid 1980's to buy high frequency radios and immediately go on the air.

This is because any Tech licensed prior to Novice Enhancement has already passed the General Class theory test and a five word per minute code exam.

A five word per minute General class code speed would also do well for the sagging ham radio support industry and the nations economy. This, since it could conceivably generate an instant sixty to one hundred million dollars in sales of transceivers, antennas and associated equipment.

With the continually shrinking dollar to yen exchange ratio, slow-code might even stimulate the creation of new ham radio manufacturing plants in the United States and create thousands of new jobs.

Slow code is also getting support from users of various public bulletin boards. An unofficial poll being conducted on America Online by Newsline is so far five to one in favor of the Amateur Radio Industry Group's Slow-Code proposal.

The Amateur Radio Industry Group has not announced any firm date as to when it plans to file its slow-code rule making request before the FCC. Nor has there yet been any reaction to this proposal from either the American Radio Relay League or the National Amateur Radio Association.

**Ham Log is the gold standard log program world-wide.**

Neil Duncan in ARA said: "Professionally-presented product...This is the way to do it properly...I have no hesitation in recommending the package...". And that was Version 1!!! On version two, Len Shaw wrote: "The author has gone considerably further (on features) than in any log program... ...you are unlikely to find abetter log-keeping program anywhere. Having seen and used a wide variety of shareware and commercial programs, I believe this one to be excellent value for money... I would say the same if it was double the cost." Born in 1990, we now have version 2.5!

Some user comments: "Golly I am impressed.... Over the Moon" "I have a number of logs and Ham Log is on the hard disk to stay!" It is without doubt the best Log I have ever used - you have covered everything - a breeze to use. "A super program and Australian" "Thanks for the excellent back-up service." An FK8 wrote to the magazine Megahertz: "My job - programming for 14 years.... I've acquired 10 log programs without ever making use of them until I purchased Ham Log. It has maximum ease of use whilst keeping a rare functional richness... perfect statistics, listings and rare tools - torture it; one use will make you appreciate its flexibility."
(VK6PY; VK5QB; VK4VHP; FK8GV)

VERSION 2.5

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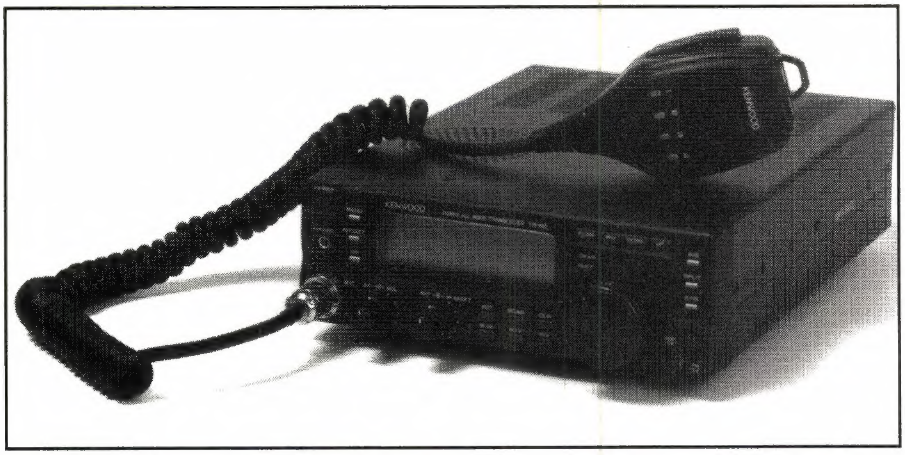
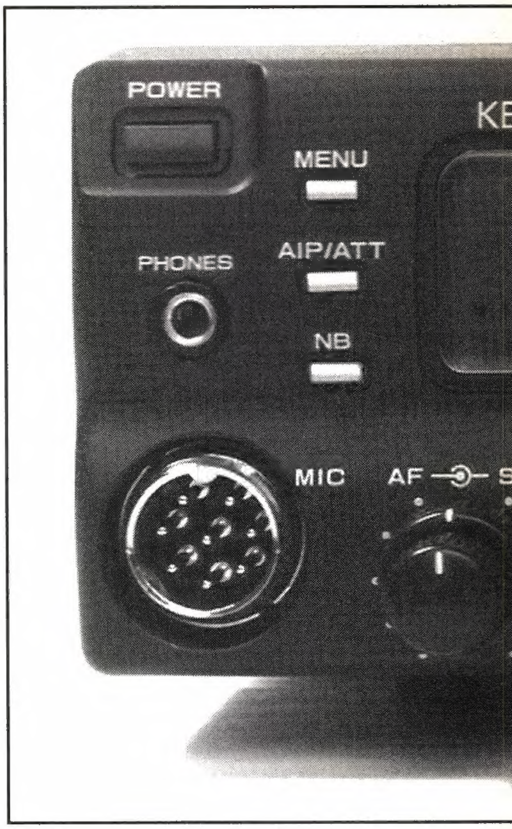




# KENWOOD TS-60S

## *a newcomer for the six metre band*

**By Steve Gregory, VK3OT**

**The new Kenwood TS-60S, like its brother, the TS-50S, appears to have been designed more for the mobile - portable -packet radio market rather than the full-blown base station 6m fanatic.**

However, having made that statement, let me assure you that the features of the TS-60S would allow you to press it into *any* type of service providing a few allowances are made.

The size of the rig is deceptive, with few front panel controls and buttons, all with duplicate functions.

It is powered from an external 12VDC source, runs about 90 watts PEP output power, and has the standard Icom/Kenwood/Yaesu DC connector on the rear panel, so it will work with most power supplies designed for those brands.

On the rear panel is an RCA ALC socket and linear keying relay socket — curious additions because it is unlikely that anyone would bother to build a mid-range power amplifier to boost 90 watts by 5dB.

And even more curious is the absence of a selectable preamplifier, which effectively limits the performance capabilities to what you can hear.

The most likely amplifier useable with this equipment, is the Tokyo HL-1K6 which many Australian six metre aficionados own, and which runs approximately the legal limit for 75 watts of drive. This would be a nice combination and would almost get by the excess baggage claims on a DXpedition.

Although the transceiver is QRO capable, I suspect that its receiver is no match for the improved transmit performance offered by a big linear, but I stand to be proven incorrect.

The sensitivity is rated at 0.16 µV on SSB, 0.25 µV on FM and 2.0 µV on AM. By comparison, my old Kenwood TS-670 with an added RF MOSFET preamp hears better than -130 dBm on SSB (that's 0.05 µV!).

The front-end circuit of the TS-60S uses a single-gate FET RF amplifier into an emitter follower and is pretty standard.

The inclusion of an RF pre-amplifier would have lifted the performance dramatically.

But, as I said, I really don't think it was designed for weak signal work.

### Performance...

I consider that the TS-60 is highly suited to Sporadic E and FM repeater operations where strong signals are likely to be experienced.

The provision of an **advanced intercept point** switch (more on that later) and **attenuator**, which collectively drop the receiver gain by more than 30dB, shows that strong signals can be accommodated.

This might be fine for downtown Tokyo or San Francisco but, with few exceptions, Australian six metre operators fly in 'open skies' with many kilometres between sharing stations, so I imagine that an external preamp would be the first order of priority.

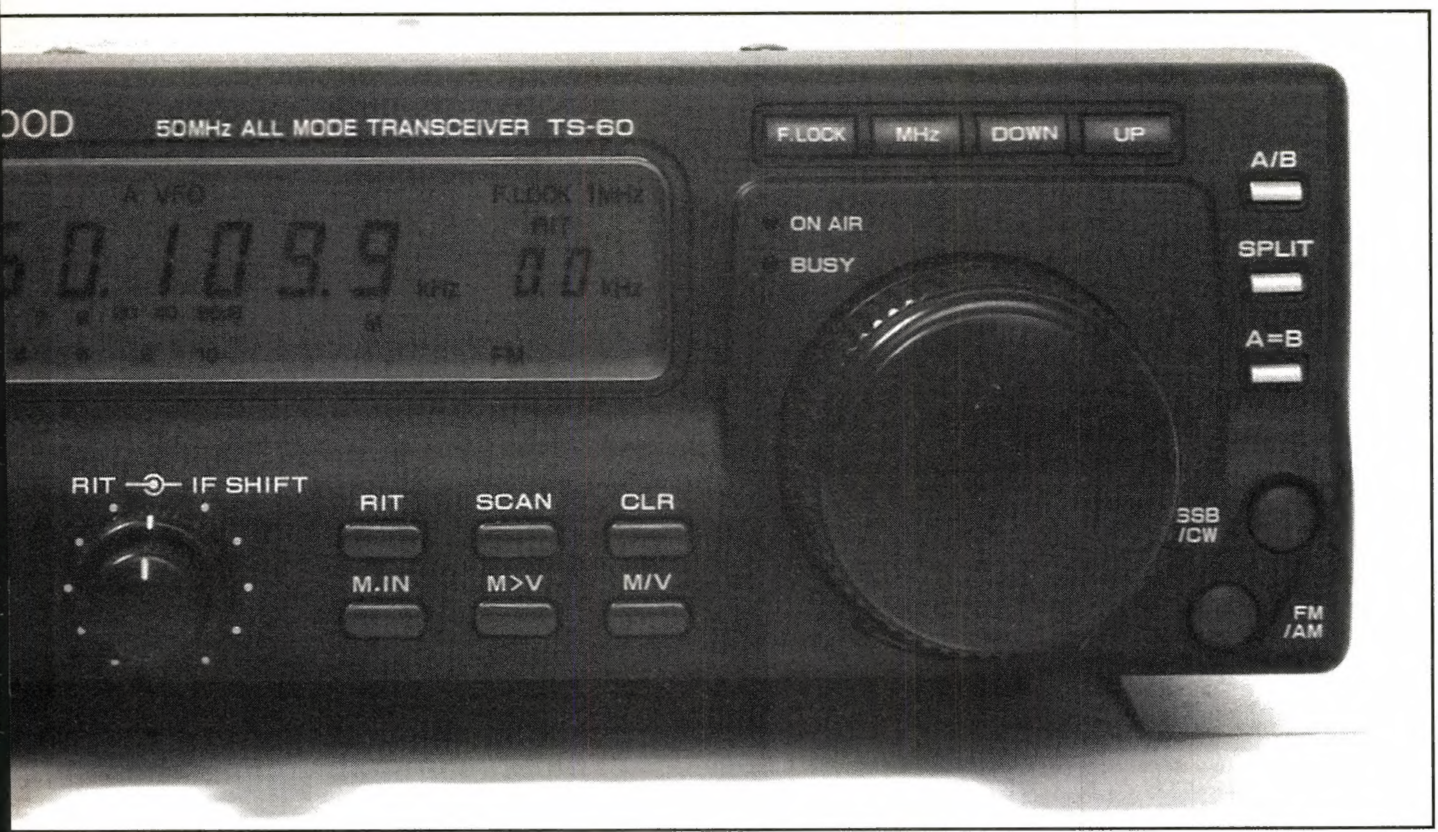
Frankly, this oversight is a pretty serious omission in a VHF receiver which is so quiet you don't think it is working.

When connected to my base station's 11-element Yagi, the low increase in sky-noise had me checking that I had the antenna changeover switch in the right position in my shack!

Out at VK3SIX, with the EME masthead amp set to 10dB (which overpowers the Yaesu FT-650) the TS-60S produced a better sky-noise response but it still seemed to lack what I consider the sensitivity necessary for long-distance DX.

But I did say that I think it is more suited to mobile/summer type E-layer openings than for extended weak signal work. I tried several contacts with Melbourne over a distance of 300 km and, although heard well, I could barely hear the return signals, which were Q5 on the old TS-670.

A similar test to VK7RNW in Tasmania over a path of 400 km produced a few



bursts but the main tropo signal was barely audible.

### Gripes and grizles

One of my pet hates is the way that certain noise blankers produce 50 Hz cross-modulation on strong signals if you have strong local power noise. Kenwood's old, superseded TS-670 and TS-680 do not do this, but Yaesu's otherwise nice FT-650 does — and, unfortunately, so does the TS-60S.

We all live with power line noise, but I find it curious with all the new designs that a manufacturer cannot reproduce the excellent noise blanker characteristics of the TS-670 transceiver, which is now 10 years old.

The TS-680S, with a variable threshold, also had an effective blanker and I am sure Kenwood could have taken a little more time and spent the money saved on the 'woodpecker blanking circuit' (which is no longer supplied) to ensure better operation of the noise blanker.

Tests with the TS-60S running through a Mirage A-1015G linear amplifier with pre-amp on, suggested that some extra receiver gain will drive the blanker circuit harder and clip out the offending noise more effectively.

This is exactly the modification which produced results with the TS-670. And again, as I type, monitoring TV Channel 0 in Wagga Wagga on 46.240 MHz at Q5, the lady next door's Mixmaster is destroying the reception and the bar graph is hitting S5 on these excessive noise bursts!

### Extended Receiver Coverage

The designers have expanded the often-criticised Kenwood out-of-band receive frequency range down to 40 MHz, which allows DX-chasers to scan from 40 to 60 MHz. This means you can cover most of the VHF low-band allocations plus the US paging services which commence at 43 MHz. You can also scan the 40.680 and 40.690 MHz Australian indoor paging services, a valuable indicator of pending E-layer openings which, as I type, are very active even for late May.

The inclusion of 99 memory channels provides easily sufficient space to accommodate most of the regular early-warning indicators, all of the New Zealand and Australian TV Channel 0/1 and 1/2 offset frequencies and all of the Chinese Channel 1/2 and Russian Channel R1/R2 combinations.

Those of us with Kenwood TS-680/690 rigs have had to find some other means of receiving what the TS-60S offers as standard, and this is an excellent selling point.

The display is entirely digital and uses the now-familiar bar-graph S-meter, introduced to the Kenwood line-up with the TS-690S.

One feature used to enhance the indicating device is the way you can set the S-meter to hold the maximum indicated strength on the display — my first experience with this idea. When monitoring the VK3SIX beacon, the uppermost bar of the signal strength indication remained visible for several seconds after the carrier dropped off, even though the rest of the bar graph had disappeared with the signal. This is very useful in reading off the last signal strength encountered, particularly if the next signal is weaker. It stayed there long enough to go from the word processor across the room to the rig to see how strong next door's cake mixer was, and is a clever trick indeed.

### Accessory Connections

On the rear panel are the two RCA sockets for linear control and electronic keyer, plus a remote computer access socket for the IF-10D, which is an optional accessory and the fourth in the line of IF-10 interfaces since the TS-670 was introduced. Again, you would think that one IF-10 interface would do *all*

....☞

## TS-60S REVIEW

*(Continued)*

Kenwood rigs and, as an owner now of three marks to suit the TS-670/680/690S, it is getting to be a costly exercise Mr Kenwood!

If this is your first rig, I can highly recommend the HamWindows software available from Daycom Communications which controls rigs effectively and remotely. For the packet buffs, you will be glad to know that all of the necessary connections for a TNC appear on the microphone connector. It is an 8-pin device and includes TXD, PTT, Up/Down, 8 volts DC, RXD and Signal Ground. In the operator's handbook, two pages are devoted to data operation.

Memory access and scanning features are extensive and beyond the scope of this article. There are 99 memories as mentioned, and there's an extensive setup page on the display to configure the transceiver. This method is similar to that featured in the TS-690S and is covered on the section about memory. Channel scanning can be set to stop when a channel is busy for a pre-configurable time interval of six seconds, or it stops as long as the channel is busy, resuming two seconds after transmissions cease. A power-down function will turn the transceiver off after three hours, which means you will never have a flat car battery if you go mobileering.

The YK-107 CW filter is specified for this model transceiver and appears to be unique to the TS-50/TS-60.

I don't know about you, but I hate

## THE TS-60 FROM A MUG USER'S PERSPECTIVE...

**By Chris Edmondson, VK3CE**

***It's clear from reading Steve Gregory's comments about this interesting new radio that he found it wanting in a few areas. I thought it might help to look at it from a normal six metre operator's point of view.***

***Steve is something of a perfectionist where his six metre gear is concerned. He can afford to be — he recently became the first Australian amateur to earn DXCC on the six metre band.***

***It's taken him 20 years of hard work, and he demands the very pinnacle of performance from his station.***

*But not many operators have such precise requirements, and I'm here to tell you that Kenwood's TS-60S didn't disappoint me with its performance. In fact, I loved it!*

*In case you hadn't noticed, there is a real shortage of commercial all-mode six metre gear on the market. Icom offers two HF transceivers with the six metre band tacked on (the IC-729 and IC-736) of which the latter is by far the better rig. It also has the IC-575H, a dual-band rig which also offers 10 metres.*

*Yaesu's tri-band FT-650 has been discontinued on our market, meantime, which leaves Kenwood's TS-690S as the only other opposition for this radio. A couple of FM-only rigs also offer this band as an option, but that's just about the lot for Oz.*

*There are two quite distinct brands of six metre operator, separated by which end of the band they populate, and the mode they use.*

*Although I have access to six metres SSB I almost exclusively use FM at the top end of the band, and it was here that the TS-60S absolutely shone.*

*In service as a mobile FM box with occasional SSB it would be a ripper. Relatively expensive for what it does, but a really good radio for the application.*

*Looking identical to the HF-only TS-50S, the TS-60S is about half as big again as a modern dual-band VHF/UHF mobile rig, which means it's an uncomfortable size for the car. Just a whisker smaller, or equipped with a remote-control front panel (like the coming new TM-255 two metre all-mode mobile — watch these pages for a review!) it would be ideal for mobile service, where its noise blanker does an acceptable job with ignition pulses.*

*To program a repeater channel you have to use both VFOs, one for each frequency needed, then hit the SPLIT button. The Icoms are the same.*

*What a pity Kenwood forgot a repeater button to automatically apply a 1MHz offset.*

*On the down side, if there had been a repeater button it would probably have had five different functions applied to it! One of the design considerations in making the TS-50 as small as possible was to make it as safe as possible for mobile operation. The number of front panel controls was kept to a minimum and a SET mode was added (which Kenwood calls the MENU). As the TS-60 uses the same case and the same front panel it, too, has a fairly straightforward front panel, but the cost of this is the difficult-to-learn multiplicity of functions assigned to each key.*

*Most buttons have two or three functions, but some have more than that. For instance, the CLR button provides six functions, depending on how you are operating at the time. It stops memory or program scan, and exits the memory scroll mode, and locks out memory channels as well. It also looks after memory channel clearing, exits the menu set-up mode and resets the auto power-off setting. All from one button!*

*To my way of thinking, a SET or MENU mode should overcome such clumsy assignments of functions — but Kenwood's MENU mode is anything but easy to use unless you have the book open in front of you. The functions are identified only by number, and what you see on the screen often gives no clue what they actually do.*

*But all that fades into the background once you put the rig on the air.*

*The signal reports are typically Kenwood. Using FM, not a harsh word was to be heard when I asked for reports. The transmitted audio is absolutely magnificent — pure, clear and clean. But that wasn't until after I had fielded quite a few complaints of very low audio level — I finally found (on page 47 of the instruction book) that MENU setting number 66 controls microphone gain!*

*The Kenwood TS-60S is best described as an FM operator's radio which may also be used for cross-town SSB chats.*

*The recommended retail price is $2036.*

*For this money you get a very good monoband mobile transceiver which can be used in the shack next time the RD Contest comes along.*

*Perhaps future versions of this interesting radio will be equipped with a receiver pre-amplifier and a noise blanker which knocks out those peculiar-to-six noises!*

exclusive filters which cannot be swapped into a new rig. You *always* do money when you sell a rig which has been upgraded with optional filters, and this one is no exception as the filter is exclusive.

The TS-60S and TS-50S feature a precision TCXO as an option, but this is probably a waste of time unless the rig needs higher stability than is offered, in which case you need the TCXO!

In the setup menu I saw some interesting features which I will but briefly mention:

- Selectable CTCSS and 1750 tone burst for repeaters.
- Peak Meter Hold.
- Automatic memory channel increment after storing a new frequency.
- Selectable memory tuning or fixed channel.
- Memory protection mode to prevent overwriting contents.
- Transmit carrier point shift from -100 to +200 Hertz.

Overall, a very nice piece of equipment which would be even better with a higher spec noise blanker.

Even so, given its rrp of $2036 , it will find plenty of buyers.

# ARA TECH SPECS

## KENWOOD TS-60S

| | |
|---|---|
| **Manufacturer** | Kenwood Japan |
| **RRP** | $2036 |

**Equipment Type**

VHF (6 Metre) all mode amateur mobile transceiver with receiver coverage extended.

**Operating Voltage**

13.8 Vdc nominal.

### RECEIVER PERFORMANCE

**Sensitivity**

See figure 1 for plotted results for FM and AM over the frequency range of 40MHz to 60MHz.

**'S' Meter linearity**

Tests carried out at 52.50MHz measured in microvolts in 50 ohms, in dBm and in relative dB using 'S' 1 as zero reference level.

**Results for FM**

| 'S' | uV | dBm | dB |
|---|---|---|---|
| 1 | 0.65 | -110.7 | 0 |
| 2 | 0.75 | -109.5 | 1.2 |
| 3 | 0.86 | -108.3 | 2.4 |
| 4 | 1.0 | -107.0 | 3.7 |
| 5 | 1.2 | -105.4 | 5.3 |
| 6 | 1.4 | -104.1 | 6.6 |
| 7 | 1.6 | -102.9 | 7.8 |
| 8 | 1.8 | -101.8 | 8.9 |
| 9 | 2.0 | -100.9 | 9.8 |
| 9+20 | 2.8 | -98.0 | 12.7 |
| 9+40 | 4.2 | -94.5 | 16.2 |
| 9+60 | 7.5 | -89.5 | 21.2 |

***Meter dynamic range - 21.2dB.***

**Results for AM/SSB**

| 'S' | uV | dBm | dB |
|---|---|---|---|
| 1 | 1.0 | -107.0 | 0 |
| 2 | 1.2 | -105.4 | 1.6 |
| 3 | 1.5 | -103.5 | 3.4 |
| 4 | 1.9 | -101.4 | 5.6 |
| 5 | 2.8 | -98.0 | 9.0 |
| 6 | 4.0 | -94.9 | 12.1 |
| 7 | 7.0 | -90.0 | 17.0 |
| 8 | 11 | -86.2 | 20.8 |
| 9 | 30 | -77.4 | 29.6 |
| 9+20 | 200 | -70.0 | 37.0 |
| 9+40 | 3mV | -37.4 | 69.5 |
| 9+60 | 23mV | -19.8 | 87.2 |

***Meter dynamic range - 87.2dB.***

**Squelch Characteristics**

***Level in microvolts***

| **Mode** | **Threshold** | **Tight** |
|---|---|---|
| FM | 0.1uV | 0.38uV |
| AM | 0.75uV | 2.8uV |

Minimum hysteresis.

Frequency error all modes = -80Hz

## TRANSMITTER PERFORMANCE

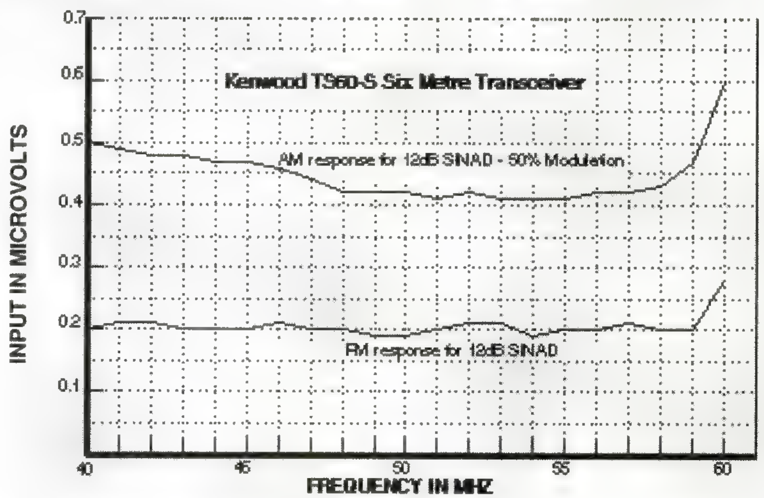
Output Power using supplied power lead with source voltage 13.8Vdc.

**Power Level in Watts RMS & PEP**

| Mode | Low | Medium | High |
|---|---|---|---|
| AM | 5.8 | 15.2 | 23.0 |
| FM | 9.7 | 41.0 | *91.0 |
| SSB 2 tone | | | *92.0 |

NOTE... * Voltage at TS-60 DC power connector dropped from 13.8Vdc to 12.9Vdc at maximum transmit power.

***Modulation per Kenwood specification.***



### *Yet another "never ending story"...*

# QUAD versus YAGI

***Dick Bird (G4ZU/F6IDC) provides his unbiassed thoughts on this perennial argument.***

**There seems to be a never ending debate about the relative merits of the Yagi versus Quad. I won't attempt to deliver the winning verdict, however, the following will provide ammunition for devotees of both designs.**

A four element Yagi makes an excellent 20 metre DX antenna and its only disadvantage for work on this band is the size, cost and weight. This leads many operators to seek alternatives such as the Quad, Delta Loop, and similar loop type structures.

We need to find out whether this entails any sacrifice of performance, or whether, as is sometimes claimed, a Quad can be superior to a Yagi in certain respects, and under some particular set of operating conditions.

Height above ground, and ground losses which can vary widely with the terrain, are factors which need to be taken into consideration, and will be examined in due course, but for a start it might be best to examine just what happens in **FREE SPACE.**

This will greatly simplify computer analysis because it eliminates a number of unknown quantities which might produce misleading results. The point of reference will, in each case, be the centre of the 'capture area'......' see appendix A'.

Obviously, it would be unfair to compare one model tuned for maximum gain against some other tuned for maximum front-to-back ratio.

Even if the comparison results in 'even break' in one or other of these aspects, we still need to consider less obvious virtues such as greater bandwidth, simplicity of tuning, or even side issues such as relative immunity to rain static.

Those of you who may have read my article on the 'Birdcage' in Antenna Book No 4, published a couple of years back, will remember my suggestion that nearly ALL loop type structures ( Cubical or Diamond and Quad ,Delta, Birdcage, 'Swiss-Quad'. etc) have practically identical gain with full-size loops, and that loop-size can be halved, if one is prepared to sacrifice a couple or so decibels of gain, and a rather narrow bandwidth.

Just out of interest, I will include such a half-scale model in the free-space comparisons so that you will know what to expect, if you MUST cut down on size.

This would permit the use of something not much larger than a 10 metre quad on 20m, or perhaps even more useful, a 20 metre quad on the 40 metre band, with moderate gain and quite good directivity over a bandwidth of some 75 to 100kHz.

On a DX signal path, favourable ground reflections will often provide a circuit gain up to 6db more that the free-space figures given by computer analysis. (It's an interesting thought that you night lose out if you put your antenna TOO high up, particularly over sloping ground).

So, without further delay, let's take a look at the free-space gain of a three element Yagi tuned for outright **maximum gain**...(plot #1).

The fairly substantial gain of 7.5dB was achieved only at the expense of limited bandwidth and very poor front/back ratio.

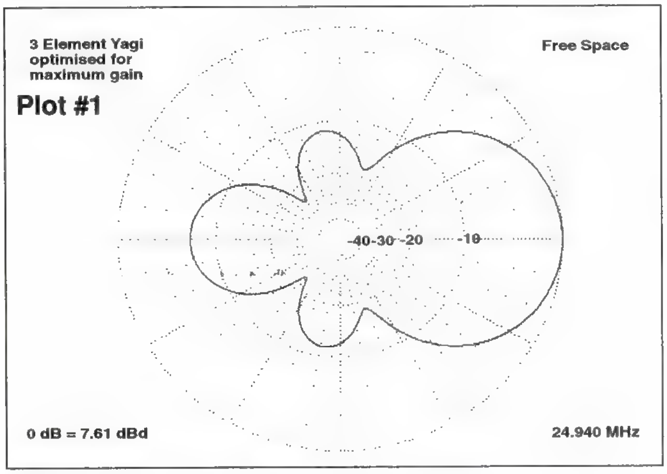
The bandwidth is, in fact, so small that it would be pretty useless, except possibly for operation on one of the very narrow WARC bands.

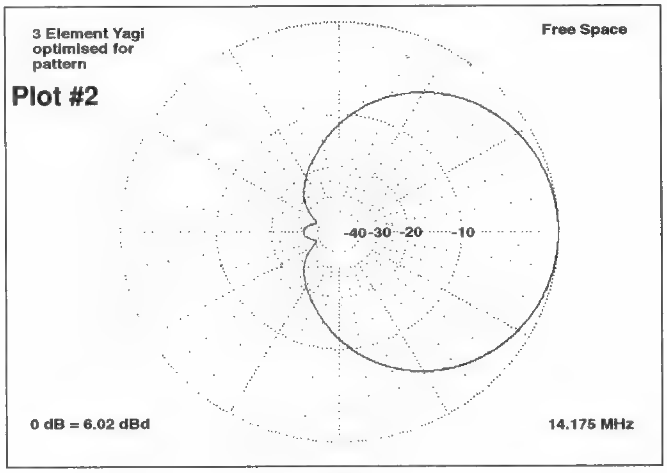
A more typical gain for a three element Yagi is the second plot, with gain of around 6dB and very much better f/b ratio...plot #2.

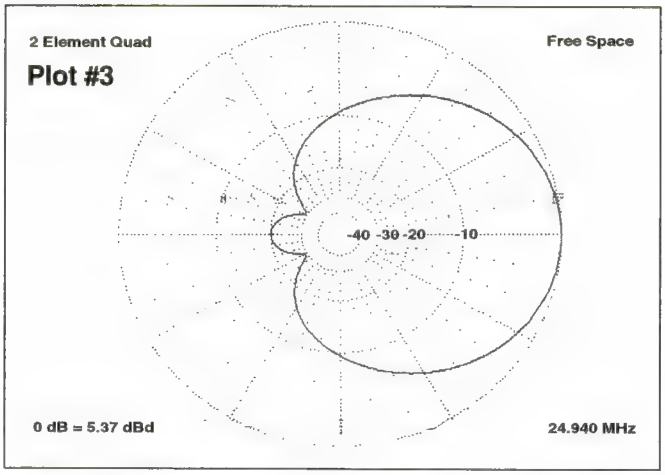
Quad users generally argue that a **two element quad is quite as good, or even better** than a three element Yagi, so let's take a look at the free-space gain of a typical Quad antenna...plot #3.

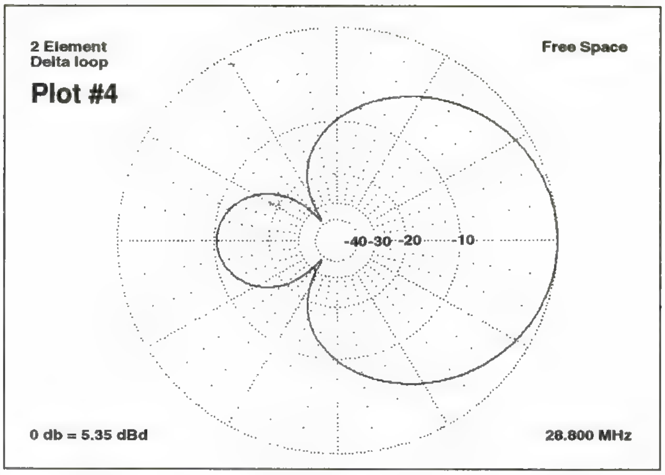
You will see that on **gain**, there is not much to argue about, (5.5 as against 6dB), but, the side lobes are not so tidy and this **could** mean more QRM on reception.

Delta loop enthusiasts might like to examine plot #4, for a two element Delta loop in free-space. Slightly less gain, and rear lobes of rather different shape









from the other antennas, but not bad at all, considering the simplicity and low cost if used as a fixed **wire** array strung between trees.

This is from a design published in the ARRL Antenna Anthology. A small change in reflector dimensions would almost certainly improve both gain and f/b ratio.

(Don't put *too* much faith in published designs).

Finally, plot #5 is for a **half-size** two element quad in free-space. The front to back ratio is not too bad, but the gain is only around 3db and with very limited bandwidth.

### COMING DOWN TO EARTH

Although it is going to make analysis much more difficult and complicated, we must now come down from free-space and try to decide just what happens at normal working heights, where ground reflections can quite often provide a gain supplement of '*up to 6db*" as compared to the free-space figures.

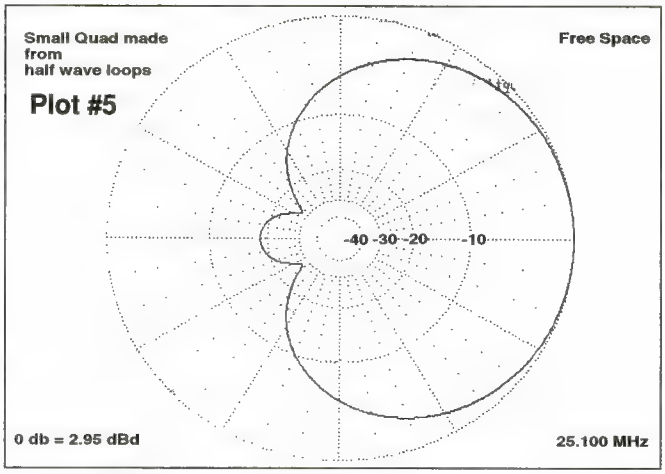
With **horizontal** polarisation, the **type** of ground has surprisingly little effect on the magnitude of ground reflections, providing that the ground is flat and not covered with dense woodland.

**Sloping ground** is quite a different matter and I will try to remember to touch on this aspect before we are through because it *can* have quite dramatic influences on the strength of the radiated signal.

**Height** of the antenna above ground is also a most important factor and we must be careful to examine this aspect very closely, particularly when trying to make comparisons between loop-type structures, which extend both upwards and downwards, and 'flat-top' arrays such as a Yagi...*see Appendix A.*

Unless you live in the middle of a salt marsh, it is comforting to remember that with relatively flat land, horizontally polarised waves can penetrate quite a fair distance into the ground until they reach the water table.

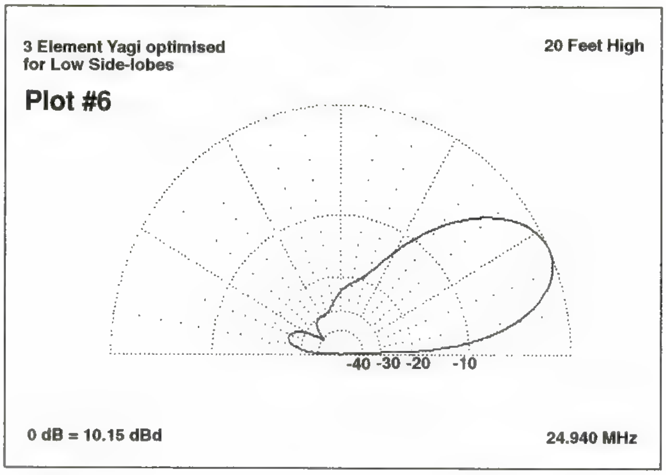
*(Moxon, G6XN), quotes figures of 16 metres for normal soil and up to 90 metres for very dry soil of low conductivity).*

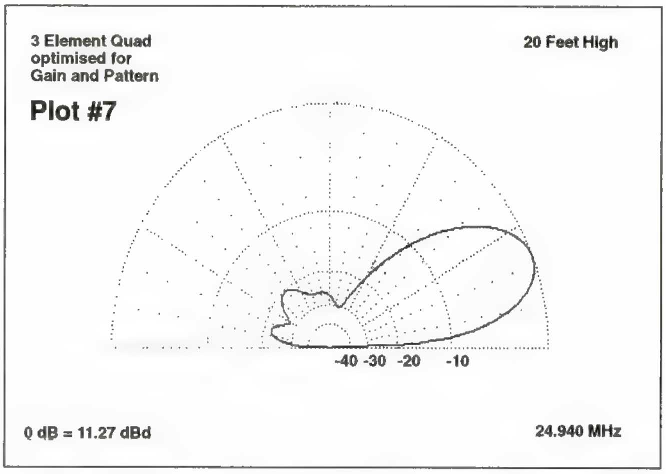


For purposes of analysis, the '*electrical height*' will therefore in most cases be **greater** than the physical height above the earth's surface, except when firing towards steeply rising ground, when the effective height could well become zero or even negative. In the opposite direction, results might often be quite spectacular.

*(I try to persuade myself that, at least during the dry summer months, my little V5 at eight metres above the ground, is*

....☞





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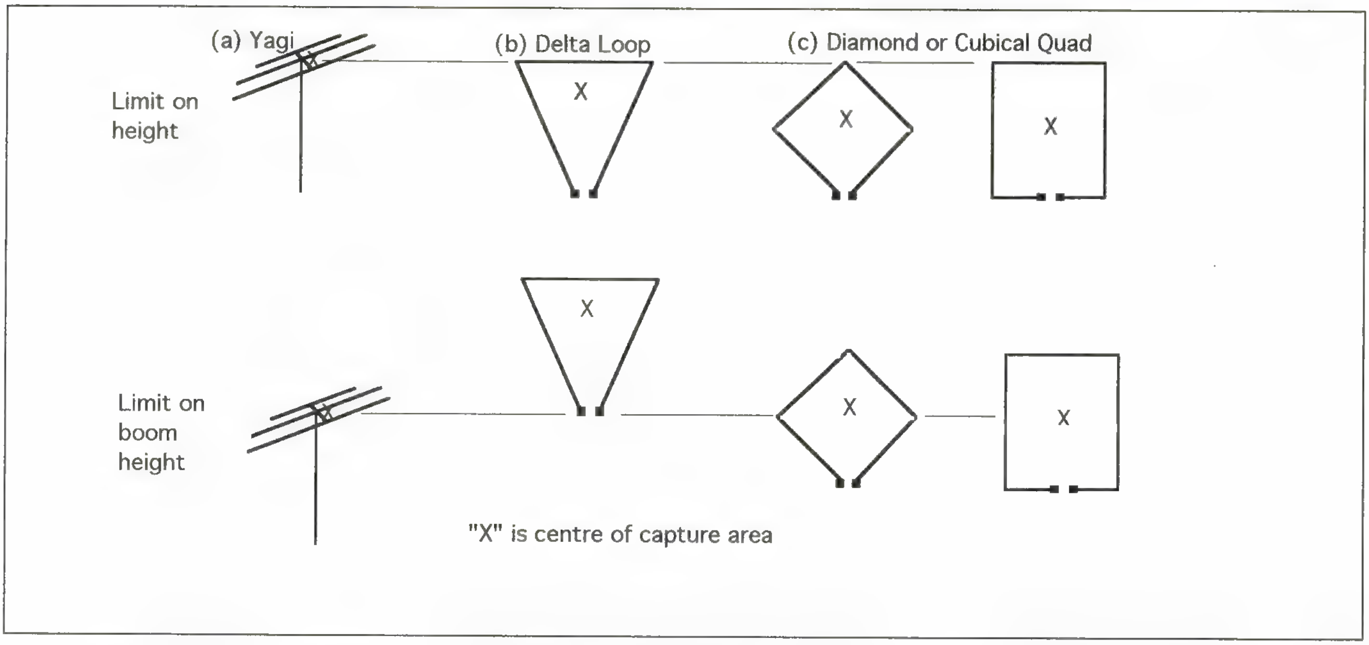


"X" is centre of capture area

### *Yet another "never ending story"...*

# QUAD versus YAGI

*(continued from previous page..)*

*probably 'electrically' well on the right side of half-wave high on the 20 metre band!?*

We often hear reports that a Delta Loop or Diamond Quad will perform surprisingly well, even when the lower extremity is almost 'touching the ground'.

This should come as no surprise, because although there may well be a certain amount of 'ground absorption' around the lower part of the structure, the extreme upper part (which is probably doing most of the radiating), is reasonably well in the clear.

When we try to compare Yagi against Quad performance at **similar height**, to be really fair we must decide whether we are talking about boom-height, maximum physical length, or the electrical centre of the 'capture area'.

With the Yagi, there is not much room for cheating.

If it is horizontally polarised, the boom-height above the water table would seem to be the correct choice...see diagram (a) in Appendix.

With a Delta Loop, if it is apex downwards, most of the radiation comes from the 'flat-top' and the centre of the capture area will be more or less at the point marked 'X' in diagram (b) in the Appendix.

With a Quad, if one is required to observe local restrictions on height, the centre of the capture area will be even lower as per diagram (c).

This is getting a bit like politics - according to which side you are on, you can produce figures to prove almost anything!

To avoid any suggestion of bias, all I can do is to present a couple of plots (#6 & #7) produced by a well known independent expert which you can study and evaluate, not only on a basis of gain, but also front to back ratio, side lobes, etc.

If I **must** add some comments, I will just remark that the three element Quad is cheaper, less prone to rain static and has a lower angle, with somewhat more gain and bandwidth.

The Yagi on the other hand possibly looks more 'professional' and might stand up better to ice-ing and 100 mph gales.

The Swiss Quad, and the Birdcage fall somewhere between the two extremes, with about 2dB less gain, because they are **two** element arrays. The Double Delta, not so far published, has 3dB **more** gain - because it has **four double stacked elements.**

### JUST TO ROUND THINGS OFF

First of all a question that can be introduced into the Quad v Yagi controversy.

The **reflector** loop of a square or diamond quad has no well defined polarisation.

It could be energised equally well by horizontal, vertical, and maybe even circular or elliptically polarised signals arriving from the rear hemisphere.

Does this mean that a Quad is likely to suffer rather more than a Yagi from unwanted QRM?

Would 'earthing' the reflector loop at an appropriate point overcome such troubles?

Finally, if you can rest contented with a **fixed** array, there is really nothing to beat a couple of Delta Loops strung between the branches of convenient trees.

Cost is practically nil, wide bandwidth, lower apex easily accessible for tuning, and virtually indestructible

## APPENDIX A

**For comparison of free-space gain between different antennas, we have to take the centre of the 'capture area 'marked (X) - TOP OF PAGE DIAGRAM - , as a point of reference.**

**In the presence of ground, if a limit on maximum physical height is imposed by local ordinances, or by available supporting structures, the Yagi design is an obvious advantage, the Delta Loop is midway, and the Quad is at a disadvantage.**

**By contrast, if we think in terms of 'boom height', we get a quite different story.**

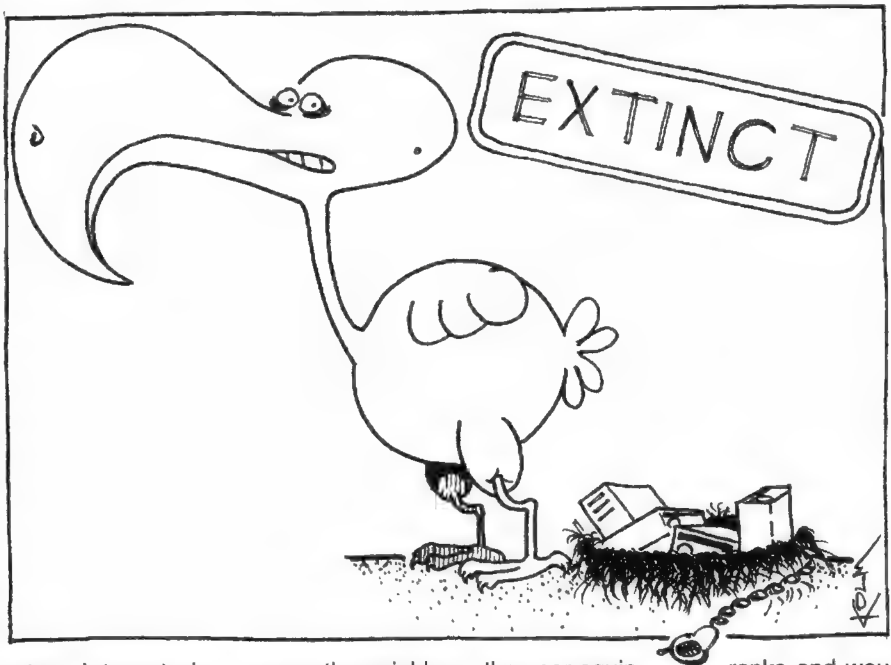
**You can see now why the Quad/Yagi argument is difficult to resolve.**

# THE FUTURE OF AMATEUR RADIO IN THE YEAR 2000

**Those perennial favorites 'The future of Amateur Radio' and 'The WIA — where to from here?' have surfaced again, but let's stop beating around the bush and be brutally frank about the future of the hobby.**

**By the year 2000 amateur radio will have ceased to exist!**

All those who haven't had an apoplectic fit should read on, and those who immediately respond "...It can't happen to us, we're a protected species..." should remember that the Dodo bird probably thought the same.



Along with CBers and computer hobbyists, amateur radio operators will all have been absorbed into a class of communicators known as 'everyone in the world'. Whether amateurs like it or not, the pace of modern electronics technology is rendering their mode of communications, their thinking and indeed their whole way of life obsolete.

Let's face it, amateur radio is going nowhere, simply using its extravagant band allocations as a cheap party-line phone. Society and government cannot continue to allow a tiny minority (0.05% of the population) to monopolise a valuable and finite resource, particularly when an alternative means of accommodating amateur interests is rapidly becoming available. This alternative technology is 'Personal Communicators'.

By the year 2000 everyone regardless of race, creed or Morse Code qualifications, will have the potential to communicate around the world using a digital wireless telephone, probably integrated with a 'Personal Assistant' (a cute name for a small hand-held computer).

Basic personal communicators are here right now, called hand-held digital phones.

They allow one to dial up across the road or across the world. You can exchange voice, fax and data with anyone with a similar unit, and there is no problem with static, propagation, jammers, foul mouths or TVI. This wireless phone system is expanding and developing so rapidly that by the year 2000 it will be worldwide and will have many more features.

Instead of a considerable investment in radio gear, all stuffed into some grotty shack, and an ugly antenna farm that annoys the neighbors, the user equipment will be just a portable phone combined with a hand-held computer and will cost *far* less than an amateur transceiver.

Everything that amateurs can do now will be done better, faster, more effectively and with more choices than you have ever had before. So who needs amateur radio?

Can anyone give me one good reason for allowing amateur radio to continue as a separate entity rather than be integrated into a socially-acceptable service offered by personal communicators?

To the contrary, I can see many compelling reasons that society, the SMA and government will put forward when they abolish amateur radio.

For a start the SMA will be delighted, because amateur radio and CB matters take up a totally disproportionate amount of time and money. It costs around $2000 to update a callsign and amateurs demand changes more than any other group of licensees (we won't question here why it costs so much to make a callsign change!), amateurs create all the TVI complaints, and now, after devolvement, they can't manage their own affairs and come running back to the SMA for help to police the bands. The WIA is racked by incessant squabbles and can't present a united policy to the SMA, let alone to its own members.

The cash-strapped government has shown that it has absolutely no loyalty or obligation to the amateur radio ranks and would happily auction off the exorbitant and very valuable frequency allocations hoarded by amateurs.

Councils and the general public would be rid of TVI and all those obtrusive towers and antennas. Amateurs are looked upon as the weirdos of the electronics world and many amateurs, by their appearance and bizarre behavior, confirm the 'Tony Hancock' image of eccentricity. Far better to absorb them into mainstream society and back into the closet.

But wait, don't slash your wrists, because there is going to be more excitement for you as a personal communicator than you could ever experience as an amateur.

The year 2000 will see all the useable frequencies rented to multi-national communications companies with the vast resources and technology to provide you with facilities that amateurs could not possibly fund.

There will be a myriad of services for the asking, all at a modest cost. For instance, instead of fighting the static, poor propagation and California Kilowatts to make that sked with your old mate in Upper Mongolia, you will just dial a few numbers and there he is, crystal clear, no fuss, no dropouts, no frustration.

All the other activities so beloved of amateurs can be offered. Let's say you want to work a rare DX location to gain points on the DXCC ladder. You just dial up a 0055 number from a list of most wanted DX countries, then wait in a queue 'til acknowledged by the computer. (Actually you won't even have to wait around, your computer can handle the activity while you weed the lawn. Bingo!) A contact is made and a DX credit given. And who cares that it was all done by some super computer in New York and not from a bunch of crazies risking life and limb to reach some godforsaken spot of guano only seen at low tide.

Consider this — for years the Post Office sold first day covers with the envelopes actually shipped to Antarctica and postmarked on each of the four Australian Antarctic bases. (I have visions of Tom Moffat sitting squat-legged in his little igloo licking thousands of stamps and pasting them on envelopes for collectors.) In the late 1980s the Post Office decided that it was all too hard so now the envelopes are stamped by a franking machine in Melbourne with the postmarks of each of the Antarctic bases.

Stamp collectors buy simulated Antarctic first day covers, so what then is the problem with making simulated DX contacts via a computer where it only costs 55 cents for 20 seconds and no-one drowns trying to reach the DX island?

Packet Radio, which should not be called an amateur radio hobby, as it's really a computer hobby which happens to use a radio, will flourish in the year 2000 because the communications companies will provide reliable and numerous high-speed gateways to the world as well as large BBS systems. Right now packet radio is stagnating because the amateur participants will not co-operate together and the WIA is sitting on its hands providing no guidance, no money, no co-ordination. Having a single controlling body for packet radio (ie the communications company) is the only way to revitalise and advance it.

WICEN is often cited as a worthwhile activity within amateur radio and so it is. The time and effort put in certainly is very laudable and is appreciated. But consider this: by using your hotch potch mix of incompatible radio equipment free and gratis you allow the government to abrogate its responsibility to provide professional equipment and training to the official organisations. There are any number of professional emergency services who would benefit by having better communications equipment, but the government will not fund it whilst it can say "Oh, call in WICEN, its gear is free..."

> ***"Can anyone give me one good reason for allowing amateur radio to continue as a separate entity rather than be integrated into a socially-acceptable service offered by personal communicators? To the contrary, I can see many compelling reasons that society, the SMA and government will put forward when they abolish amateur radio."***

But as we saw in NSW during the recent bushfire emergency, WICEN cannot be relied on to be there.

The NSW WIA council, which many compare to a bag of prawns left in the sun, had turned off the WIA's (member-funded) repeaters apparently to prevent comment considered critical of the council and were reluctant to provide access until official action was threatened.

In the year 2000 emergency communications will be interlinked into the personal communicator system. In an emergency normal users would be locked out and PERCEN (PERsonal Communicators Emergency Network) members would have priority on the channels. If the local repeater equipment suffered damage, sophisticated portable repeaters and satellite stations would be brought in from across the country, and importantly all the gear would be compatible.

What will happen to those dedicated experimenters who are researching propagation on, say, six and two meters? Well, sorry guys, you are reinventing the wheel.

It's all been done before by international laboratories with million dollar budgets, so there is no reason to permit the very, very few who still play 'radio' to have any special privileges. It is hardly an achievement to waste years of your life to contact 100 countries when a personal communicator can contact anyone, anywhere, anytime. On the other hand if you are keen on moonbounce or satellite operation just dial 0055-MOON and, within seconds, you will be connected through to a 30-metre dish and have the excitement of talking to a fellow communicator on the opposite side of the world, via the moon or through a commercial satellite.

You will even save money on equipment because you only need the one unit, a personal communicator which will cost maybe $500 complete with inbuilt RF modem and screen.

You may choose to rent your unit just as you rent a telephone, to take advantage of new features as they come along. Incidentally, have you noticed that the prices of mobile phones and computers continue to drop substantially despite the rising exchange rate, yet the exchange rate is used as the excuse for increasing the price of amateur gear, which will eventually drive it off the market?

Foul mouths and jammers are no problem for commercial operators because every personal communicator will have a unique serial code which is transmitted, so the misfits will be automatically locked out of the system, as will those users who don't pay their monthly bills.

And what of the Wireless Institute? Where will *it* be in the year 2000?

The WIA proudly proclaims that it is the oldest National Radio Society in the Commonwealth. Well I'm not too sure that is a claim the poor tired old WIA

....☞

## *THE FUTURE OF AMATEUR RADIO IN THE YEAR 2000*

***(continued from previous page...)***

should allude to, because it doesn't seem to have progressed much since 1910. After 84 years one would expect a large, professionally-run organisation, well respected by the community, local authorities and government. A force to be reckoned with in negotiations, with amateurs proud to be members, and having a strong financial base and a vision for the future. Instead we see a toothless tiger, which in the minds of many seems unable to influence the SMA or politicians, and with problems promoting amateur radio to other amateurs, let alone to councils and the public.

These days, it is struggling to entice even 30 per cent of amateurs to join, and most members are only in there for the magazine. Every few months the WIA asks its members what they want from the WIA.

After 84 years they still don't know!

This frequent soul searching goes on because the WIA has less and less of a role in amateur activities but just won't lie down and die.

In the year 2000 the WIA will be totally superfluous because the commercial suppliers will manage the airwaves, set the rules and determine the policy. There may be a niche for a 'Communicators Monthly' to give news and events and special deals, just like a computer club magazine.

When I think about it, such a magazine could be a gold mine, like ARA, with a potential readership of millions in just the English-speaking world.

The magazine would probably still be a paper copy but excerpts would be online via your local Communicator BBS.

The ritual exchange of QSL cards consumes untold thousands of hours of time by volunteers and costs mega-dollars in postage. What a criminal waste of resources! And what happens to all those precious QSL cards? They are stuffed into shoe boxes and filed in the bottom drawer 'til the recipient passes away and his relatives burn them to get rid of the smelly junk.

The communications companies in the year 2000 will have a 0055 service whereby each contact you make will be logged electronically and fed into a world wide database so that those who need to massage their egos can see how many contacts they have made compared to the others.

You will still be able to print out your QSLs on a computer printer attached to your Personal Communicator if you need extra wallpaper...

Clubs and groups will use the 0055 Party Line facility to get together simultaneously. People with similar interests around the world could register with the computer and send out a 0055-CQ to be connected to another kindred soul selected at random from the database.

Could you run a contest in the year 2000? Easy, each participant registers via his Personal Communicator, then a computer using a random number generator selects pairs of contestants and gives them a score determined perhaps by distance between them, number of people in the particular country, and so on. Computer programs, technical data, news and views, recipes for scones, a swap column for medical complaints, gossip and lonely hearts... it will *all* be at your fingertips, via the biggest BBS in the world.

You won't need to pass a Morse Code test — in fact no tests at all — to gain a Personal Communicator's licence and it will be valid anywhere in the world, provided you pay your rental and usage fees.

So you see, amateur radio may be dead and gone but everybody wins!

---

**MANY QUESTIONS**

There are still many questions about the causes of Multiple Sclerosis. More funds means more research and more answers. A cure could be only dollars away.

**MS**

**Multiple Sclerosis.**

# RSGB ISLANDS ON THE AIR CONTEST 1994

**Following the great success of the first IOTA Contest in 1993, the rules have been reviewed in the light of entrants' comments. The major changes are the inclusion of CW, points credit for contact with one's own country,
and a limited (12 hour) category.**

### 1. GENERAL

The aim of the contest is to promote contacts between stations in qualifying IOTA island groups and the rest of the world and to encourage expeditions to IOTA islands.

***Note: Mainland G/GM/GW = EU005
Mainland GI/EI = EU115***

### 2. WHEN

1200 UTC Saturday 30th July to 1200 UTC Sunday 31st July 1994.

### 3. BANDS AND MODES

3.5, 7, 14, 21 and 28MHz, CW and SSB. IARU bandplans must be observed, and CW contacts must be made only in the recognised CW ends of the bands.

Contest preferred segments must also be observed, i.e. no operation must take place on 3.56 - 3.60 MHz, 3.65 - 3.70 MHz, 14.06 - 14.125 and 14.30 - 14.35 MHz.

### 4. CATEGORIES

(a) Single operator.
CW only, SSB only or mixed-mode.

(b) Single operator limited.
CW only, SSB only or mixed-mode.
Operation is limited to 12 hours, and contacts on any THREE bands count for points. Off periods must be clearly marked and must be a minimum of 60 minutes in length.

(c) Multi operator single transmitter.
Mixed mode. Only one transmitted signal.

***Use of packet cluster or other assistance during the contest places the entrant in the multi operator category.***

### 5. SECTIONS

(a) IOTA Island Stations.
Stations on an island with an IOTA reference, for example AS007, EU005. This section includes the British Isles.

Entrants intending to operate from a location whose IOTA status is not clear are advised to confirm validity by reference to the IOTA directory available from RSGB head-quarters. Please indicate on the entry whether the station is permanent or a contest DXpedition, i.e. antennas and equipment installed specifically for the contest.

(b) World (listed by continent).
Any station in a location which does not have an IOTA reference.

(c) Short Wave Listener.
See rule 10. The format of the listings will depend on the number of entries received.

### 6. EXCHANGE

Send RS(T) and serial number starting from 001, plus IOTA reference number if applicable. Do not use separate numbering systems for CW and SSB.

Stations may be contacted on both CW and SSB on each band. Entrants in section (a) MUST send their IOTA reference as part of each contact.

### 7. SCORING

***(a) QSO Points.***
Each contact with an IOTA island counts 15 points. Other contacts count 5 points, except contacts with the entrant's own country or own IOTA reference, which count 2 points.

***(b) Multiplier.***
The multiplier is the total of different IOTA references contacted on each band on CW, plus the total of different IOTA references contacted on each band on SSB.

***(c) Total Score.***
The score is the total of QSO points on all bands added together, multiplied by the total of multipliers.

### 8. LOGS

UK stations must use a Summary Sheet and RSGB-style log sheets, other entrants may use log sheets in local format, together with a summary and signed declaration that the rules and licence conditions have been complied with.

Separate log sheets must be used for each band (but not each mode).

Single mode entrants who make contacts on the other mode should submit these separately as checklogs.

***Logs must show:*** Time, Callsign, RST/serial number/IOTA reference sent, RST/serial number/IOTA reference received, multiplier claimed, and QSO points.

Entrants are encouraged to submit cross-check ('dupe') sheets and a multiplier list. Logs on computer disk are welcomed, in accordance with RSGB format.

Entries must be postmarked 26 August 1994 at the latest, and mailed to the following address:

**RSGB IOTA Contest, c/o S. Knowles
G3UFY, 77 Bensham Manor Road,
Thornton Heath, Surrey, CR7 7AF,
England.**

IOTA stations must state their location, i.e. island from where they operated, as well as their IOTA reference number. Checklogs from non-entrants are welcome.

### 9. PENALTIES

Points may be deducted, or entrants disqualified, for violation of the rules or the spirit of the contest. This includes refusal by IOTA island stations to make contacts with their own country when requested.

Use of a third party to make contacts on a list or net is also against the spirit and may lead to disqualification. Duplicate contacts must be marked as such with no points claimed. Unmarked duplicates will be penalised at ten times the claimed points, and excessive duplicates may cause disqualification.

### 10. SWL CONTEST

Scoring is as for the transmitting contest. Logs must be separate for each band, and show Time, Callsign of station heard, RST/serial number/IOTA reference sent, callsign of station being worked, multiplier claimed, and QSO points. Under "callsign of station being worked", there must be at least two other QSOs before a callsign is repeated, or else ten minutes must have elapsed.

If both sides of a QSO can be heard, they can be logged separately for points if appropriate.

### 11. AWARDS

*(a) The IOTA Trophy (non-returnable) will be presented by the IOTA Committee to the entrant, whether single-operator or a multi-operator group in the IOTA Island Stations Section (DXpedition subsection), with the overall highest checked score, regardless of mode. A trophy will also be awarded to the leading non-DXpedition IOTA entrant, and it is hoped to introduce further trophies as the contest grows.*

*(b) The DX News Sheet Trophy (retained for one year only) will be presented by the Editor of DX News Sheet to the British entrant operating from a location in the UK (including GD, GJ and GU) with the highest checked score in the single operator SSB category.*

*The winner of the IOTA Trophy will not be eligible for this award.*

*(c) Certificates will be awarded to leading stations in each category and section, and in each continent, according to entry.*

### 12. Note from the IOTA Director

Amateurs planning to activate an all-time new one for IOTA over the IOTA Contest weekend should, if possible, arrange to commence their operation in the preceding 24 hours to enable the new reference number to be issued before the start of the contest.

Once the contest is under way, it will not be possible to issue a new number and, without this, contacts made will not count as island contacts.

# Kantronics KPC-3 baby TNC

# Proof that good things *do* come in small packages...

*By Chris Edmondson, VK3CE*

**It wasn't all that long ago that none of us had ever even *heard* of Packet Radio. That's not surprising, as it's only a fairly recent addition to the average amateur's repertoire. What *is* surprising, however, is the astonishing rate at which Oz amateurs have taken this new technology to heart. From a fairly slow start, we're now one of the highest *per capita* regions in the world for AX.25 packet operation. We're following the same trend with PacTOR, but that's another story which will doubtless be presented soon...**

The first Packet Radio controllers were fairly cumbersome, but revisions in size came fairly quickly as the technology was developed. These days, there are quite a few smallish packet controllers on the market, and it is one of the later generation of these which we examine this month.

The *most* compact of packet controllers, or **TNC**s (**T**erminal **N**ode **C**ontrollers), aren't really TNCs at all.

When you see a packet controller built inside a tiny little D-connector or similar, you'll probably find that it's little more than a modem chip with a couple of external components, while the packet controller itself is found in software only within the computer. Although this can mean an inexpensive entry to the mode, it could also be an important consideration for you if you plan to use a smaller controller with a dumb terminal (such as a Tandy 100 or 102, or similar), as most small laptop keypad devices of this type cannot contain the software needed for that sort of controller. And remote use (as a digipeater or similar) is *completely* out.

The **Kantronics KPC-3**, however, is a small but full-featured TNC with all the features a newcomer or packet devotee could ever need, plus a few useful additional features I've not seen before.

If you're a bit hazy about what the TNC does, a thumbnail sketch may help: think of it as an interface between your radio and computer.

You hook it to a transceiver on one side and a computer or terminal on the other. Tune your VHF radio to the appropriate channel, and text pours onto the computer screen.

It's really that simple (well, *almost*!). You can tune to a local packet bulletin board system (PBBS) to find out what's happening out in amateur radio land, or you hook up to a mate across town and exchange computer viruses (sorry, *programs*).

And if the mate's not at home, you can put that 32 KBytes of memory in his KPC-3 to good use and leave a message asking him to call. It could be quite a big message — this article, start to finish, takes up 11.9 KBytes on my computer's hard disk, so there's actually quite a bit of room to move in there. All very civilised.

And all very technical too, I might add. The KPC-3, in common with all stand-alone TNCs, needs a computer of its own to operate. There's a big beast of a microprocessor lurking somewhere in there, and it looks after the whole shooting match.

Lots of people have heard of the PacComm Tiny 2. The Tiny 2 — seen through modern eyes, tiny only in terms of its name, by the way — enjoyed a well-deserved success, because it was simple and it was cheap, and it worked. That gadget launched a lot of packet careers...

But until recently, the Tiny 2 also had a 'brother', and far fewer people know that. The PacComm Micropower was, at least externally, identical to the Tiny 2, but its chipware was all expensive ultra-low consumption stuff, and you could satisfactorily run the thing from solar cells or a nine volt 'tranny' battery for a time if you really needed to. The Micropower has gone now, replaced along with the Tiny 2 by a new TNC, but the 'micropower' moniker also suits this capable entry-level newcomer from Kantronics, maker of the enduring KAM.

Unlike most earlier TNCs, the Kantronics KPC-3 really is small, measuring just 21mm high by 133 mm wide and the same amount long.

It weighs just 320 grams (but 11 ounces sounds better!). The KPC-3 is a genuinely low-consumption device, too, as it will happily run for several days from one of those ubiquitous 'tranny' batteries.

Its flat-out power consumption is in the order of just several milliamps — and remember, there's a computer in there with 32 kilobytes of random access memory (RAM), so that's no mean achievement. You can upgrade the memory, by the way, to 512 KBytes, but that understandably increases the current drawn.

The manual's specifications page suggests current consumption of up to 40 mA — I connected a meter to it and saw under 20 mA at all times, so battery life really shouldn't be a major concern. It's also very voltage-tolerant, and will run happily with as little as six volts applied to it, or with as much as 25 volts DC applied — a fourfold increase! Kantronics is clever like that.

Remember the rfconcepts two metre amplifier we checked out recently, the one which gave 60 watts out whether you applied one watt or eight to the input? Kantronics and rfc are the same mob...)

The 'Options' section of the unusually good manual explains that, by turning off the indicator LEDs and selecting internal (rather than software) carrier detect, you can reduce current consumption to below 15 mA, but the actual result will depend on the RS232 connections.

I am reminded of the smallest TNC I've ever come across — the Heath HK-21. Although it proudly wore a Heath tag, this TNC was no kit. What struck me about it was the two simple, extra on-off DIP switches on the front panel.

You could choose to turn on and off the LEDs (as you can with the KPC-3) but you could also turn off all the circuitry involved with the RS232 section.

This meant that you could use the Heath as a remote digipeater and disable everything not actively used in a remote location — and, presumably, you're not likely to want to hoist your desktop PC up the tree with the baby hand-held and TNC inside a paint tin with a quarter wave whip on the top and solar cells all around!

Yep, that's exactly what I did for a series of propagation tests around my new QTH and, because it was packet radio, it was perfectly legal, too.

Mind you, after some of the dramas I've had with a certain PC of late, I could be very tempted indeed to 'hoist' the stupid thing!

Perhaps, in the search for the *ultimate* low power consumption, Kantronics might consider somehow switching the RS232 chip in future incarnations of the nice little KPC-3...

I know it sounds a bit mean drawing comparisons, because I really *do* like the KPC-3 a great deal, and it deserves every success it gets... but there's one more thing from the old HK-21 that I really found useful: you had *two* choices of radio interface.

The HK-21, less than half the size of the already-small KPC-3, was clearly designed with silly stuff like portable operation, field days, WICEN (and the like) exercises, and general haring about.

So there were two sockets on the tiny front panel, and these matched the mic input and speaker output of your average hand-held.

But when you got back home again and wanted to use a *real* radio you could, simply by pulling the HT's two leads out and connecting instead your full-size radio with its normal PTT circuit through the handy phone-type connector also crammed onto the front panel. Terrific thinking, that.

There have been a few other TNCs specifically aimed at the more 'pedestrian' of amateurs, such as the interesting *PacComm HandiPacket*, but it is near enough to impossible to keep nasty computer noises out of your HT if the TNC and radio are attached together, as suggested by one manufacturer, obviously with a twinkle in his eye.

And, I must say, I find it hard to see an on-foot amateur with a hand-held in one pocket, a TNC in another, a computer in his or her hands, wires flowing

....☞

# Kantronics KPC-3 baby TNC Proof that good things *do* come in small packages...

everywhere — and touch-typing on the run! You'd get arrested quick smart.

So the KPC-3 is aimed at the *real* market, the next size up, as it were. I tried using it with an *Atari Portfolio* palm-top PC and thought it was a real pain, but the next size up — a compact laptop — was another matter altogether.

For the test, we loaded the XYL and kids into the family bus and headed for the out-laws.

Desperately sorry that I had scientific experiments to perform, I went out to the car where I reached under the seat for the baby laptop and a few short lengths of cable.

A few moments later and there we were — mobile packet radio! I sat there for half an hour pulling mail and bulletins from a bulletin board 60 km away and chatting to other packeteers around town.

You wouldn't want to try it while you were driving, of course, but it proves a point. My XYL later proved a point, too, but the injuries soon healed.

Likewise, operation on a field day or WICEN exercise is right in there, too. I tried the KPC-3 with an internal 9V battery, a dual-band hand-held with big NiCad battery and a Diamond dual-band whip (as good as a linear, that thing!) and the baby Macintosh PowerBook on its batteries, and chatted until I was completely talked out almost three hours later.

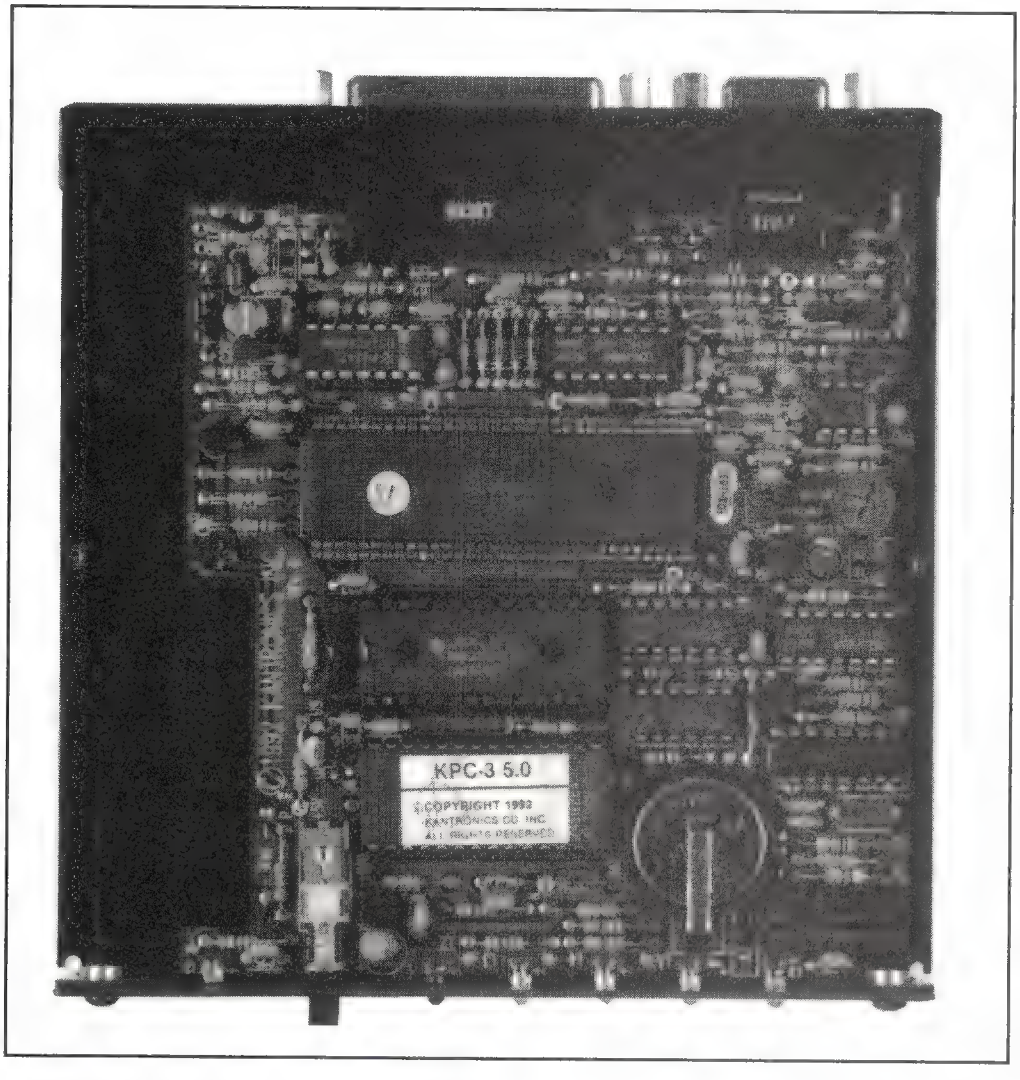
You could try another setup I used, too. A 6.5Ah gel cell powers the whole lot — rig, TNC and terminal — and would last for *weeks* on one charge. The trick to remember on that WICEN exercise is that downsizing the keyboard beyond roughly standard size tires you very quickly.

Take a look at one of the terminals like the old Tandy 102: a full-size keyboard and built-in phone modem — bugger-all RAM, though, but a disk drive was optional — and perfectly adequate for sending scores or checking officials' names, for example.

### OTHER FEATURES...

Like most of the TNCs on the market these days, the KPC-3 is supplied standard with a sawn-off bulletin board built-in, which means you can leave it connected to your radio while you tend to other things and come back to a number of messages from friends, or bulletins from around the world.

You can also use the mailbox to send messages to other people — just like a bigger PBBS (Packet Bulletin Board System) — as can other people who connect to it, if you choose to let them.



The KPC-3 doesn't give away a thing to other TNCs, although it is limited to running 1200 baud (VHF) Packet only, and it doesn't have the room for either a 300 baud board, as it were, or a higher-speed 2400 baud option, as is common in some markets.

But it does let you view weather facsimile (wefax) pictures with the addition of an HF receiver, which is quite a departure for an entry-level TNC.

You have to keep reminding yourself that this is the entry-level Kantronics Packet controller.

At just $269, I'd say it's good value indeed, and is a good entry-level unit for those wishing to check out the Packet world.

In fact, it's ideal for the newcomer, and this is one area where it has an unusual and very welcome innovation:

### NEWCOMER MODE

I remember the very first time I hooked a packet TNC up to my radio and looked for signs of life in the very new mode.

I was pretty flustered by all the commands available.

Seasoned operators know that there are many packet commands they don't really need to remember, but the problem is that new chums really don't know which ones are important to know (beyond the obvious ones like connect and disconnect, of course) and which ones can be forgotten about.

Kantronics' designers recognised this quandary its new customers were likely to find themselves in, so they added a new control level in which only 32 of the most important commands were made available to the user.

After it gets through the usual six pages of introductory comments about civil insurrection, Acts of God, FCC and riots, the user manual (which is a *really* big improvement over some past efforts, Mr Anderson, Sir!) introduces Packet Radio concisely, then explains that you'll start off as a NEWUSER, in which most of the confusing parameters you don't really need to know about at this stage will be closed off to you.

Quite frankly, I'd suspect that a certain proportion of users will leave their KPC-3s permanently in NEWUSER mode, and why not?

The device works quite adequately well that way. For the more adventurous, a simple keyboard command allows full user access to the entire vocabulary of commands... but you have to read just enough of the manual's preamble find out *how* to change it. Sneaky blighter...

### HOST MASTER

You're really out of luck if you buy one of these gadgets late on a Friday night and forget about some software for the old PC, right? Wrong.

It may be basic, but enough basic software is included on the accompanying 5.25" disk to get you up and going.

You have a Mac or Commodore? Tough again. Unless you want to shell out a bit more and pick up what is arguably one of the finest host mode packages I've seen.

If you don't know about host mode, I can save you a lot of fruitless looking through books which forget to explain the basics; host mode is where the TNC's command structure is looked after by the probably superior processor in your computer.

The KPC-3 is very nicely supported by an excellent family of host mode computer software packages, all called **Host Master**.

The computers covered are the **IBM PC** and compatibles (**Host Master II+**), the **Apple Macintosh** (**Host Master Mac**), and **Commodore 64** or **128** (**Host Master 64**).

The first time I encountered Host Master was on a PC, and I was more than a little confused by it.

I'd been using terminal programs which let me put my command arguments direct to the TNC I was using, and I was accustomed to getting more or less the same results from just about any TNC I used.

But Host Master is a host mode package, which means the TNC is used virtually as a straight modem, with the software inside your computer doing all the hard work.

There's more than a little sense to this approach, I suppose, as your computer should have quite a bit more processing power than your TNC, so it all stood to reason to use this approach.

But this means that the expected results from the TNC are rarely seen, which can lead to quite a steep learning curve if you've used normal AX.25 commands for a few years.

I recently encountered HostMaster Mac, however, and was instantly converted.

This is an *outstanding* communications package written by *Kevin Krüger, N0IOS*, and it complements the KPC-3 in the nicest way.

Likewise the other versions, I'm told.

The software has a little chat with the TNC when you fire it up, and works out which TNC it's connected to before proceeding.

That's quite clever, actually. It simply won't progress beyond the welcome screen if your TNC isn't one of the Kantronics family. Period.

It then opens a variety of windows on your screen, and gives you total control over what the TNC is doing — yet it does so in such a way that you don't really need to know which parameter of the TNC is being changed.

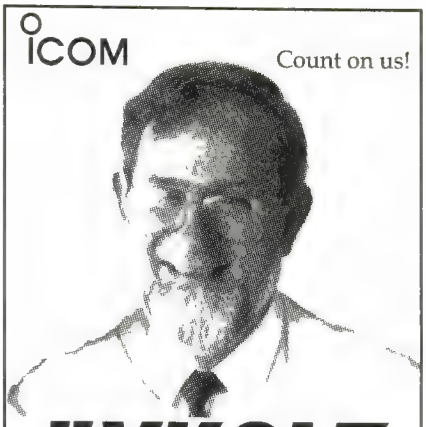
### Summary

The Kantronics KPC-3 is small, affordable, portable and very effective as a basic VHF packet controller. It is a formidable package when teamed with Host Master software, and works effectively with all the 'normal' software I tried with it.

It's imported by Melbourne-based Daycom, which also means that you shouldn't have any difficulty with product backup if you ever need it.

Overall, then, highly recommended.

*Amateur Radio Action thanks Daycom for the supply of the review TNC.*



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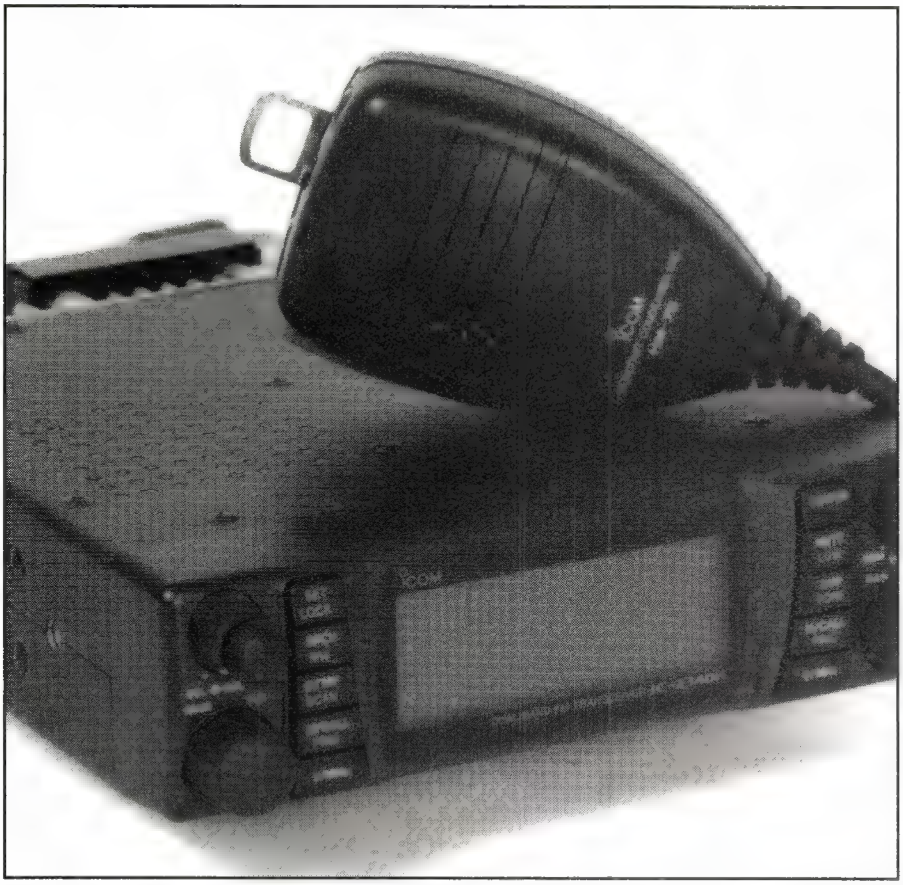
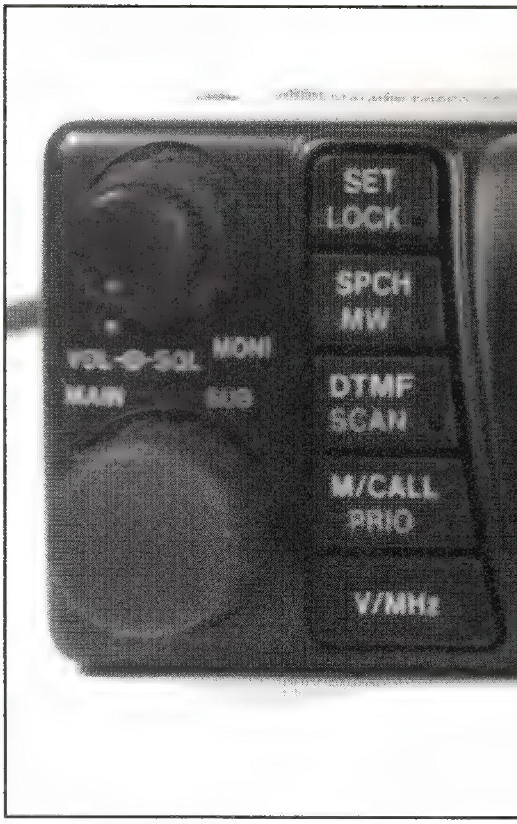




## Reviewing the new IC-2340H (or)

# THIS ONE IS HEADED FOR THE TOP

By Chris Edmondson, VK3CE

**Icom, you can give me one of these new jiggers any day you like! Icom's latest entry-level dual-band mobile transceiver has hit the ground running, to the point that I predict this new radio will join Icom's top-seller list in very short order.**

What you get here is Icom's new-look all-in-one mobile rig, offering just about everything save a remote-control option — and that's offered by the similarly-specified but more expensive IC-2700, which we haven't yet reviewed in these pages. So before we go to air with it, let's see where this newcomer fits in Icom's scheme of things.

Icom has traditionally applied a different numbering scheme for radios sold in its domestic market to those sold overseas.

The IC-781, for example, is an IC-780 in Japan. The IC-765 is an IC-760 PRO at home. Our IC-737 is their IC-732. Our IC-728 is their IC-732. And the new IC-2340, to my way of thinking, *should* be called an IC-3240 here.

The rig the new IC-2340 replaces was called the IC-3230 here. Before it was the IC-3220, the IC-3210 and the IC-3200. In Japan, those models were called the IC-2330, IC-2320, IC-2310 and IC-2300 respectively.

Running in parallel with those radios was the IC-2410 and, before it, the famous old IC-2400. The IC-2410 was recently replaced by the all-new IC-2700, which offers, for the first time in an Icom dual-band mobile, a remote-control capability in which the front panel can be separated from the radio.

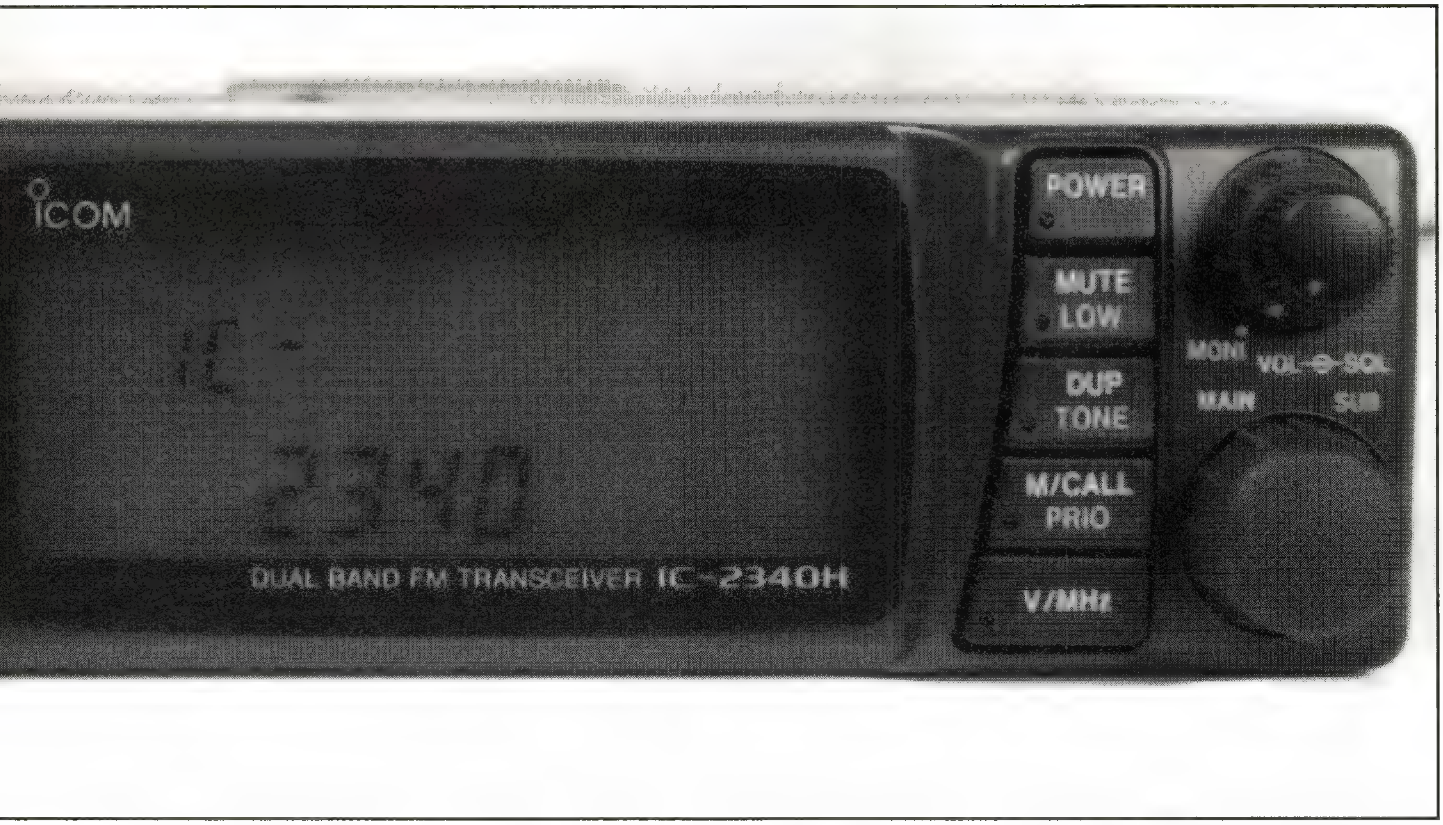
I'm told by one well-informed industry observer that the Australian IC-2340 has moved to a 'Japanese-sounding' number because the IC-2410 has gone, but that doesn't quite make sense.

Oh well, who really cares when it's all said and done?

The new radio, or the replacement radio, whichever way you choose to refer to it, is all-new from the ground up — and it's a real corker.

To start with, the Australian market (curiously, despite what the specifications panel in the instruction manual claims) covers more territory on receive than any Icom dual-bander to come before it, yet it does so with aplomb, composure and style.

Pocket pagers do not appear to affect this transceiver anything like as badly as



they affected the IC-281H when I tested it a couple of months ago, yet that is a two metre single-band transceiver with more than a passing resemblance to the IC-2340, circuit-wise as well.

And receiver performance on the UHF side of the box appears to have been similarly improved, again without any attendant problems immediately becoming evident.

I used the new dual-band radio for several days in both base and mobile situations, and the first comment of most stations was that the transmitted audio was striking — nicely rounded, but surprisingly penetrating and very clear.

### Layout...

The front panel is very neat and tidy indeed. The design is a symmetrical affair, with a large LCD display in the center of the panel dominating the transceiver (which, I might add, is commendably small).

The backlit display extends from almost the top of the panel to almost the bottom, which means there's plenty of room for big, clear digits and additional information.

On each side of the display are five buttons, each of which has a small backlit dot for locating them at night (if you know what each button's purpose is), and several of the controls are mirrored on each side.

Further out, beyond these buttons, is a small tuning knob — again, one each side — and, above that, conventional concentric knobs for volume and squelch. That leaves simply nowhere on the front panel to connect a microphone. So it's moved to the back.

The microphone's cable is a 'flying' lead, looking just like the single coax lead for the antenna but, rather than give you any additional versatility (remember, there's no remote control arrangements here), I suspect it will lead to a few knots in some less-neat installations.

Removing the microphone connector from the front panel has probably been done more to allow Icom's design people to make a completely symmetrical transceiver than for any other practical purpose.

But it *really* looks good!

The reason there's only one coax cable is that there's a built-in duplexer for single-antenna mobile work. That's as I'd expect — the IC-32xx series has always been built that way... even if this one doesn't have its numbers organised along the same lines!

But the tidy symmetry of the front panel isn't just appearance; it's also extra functional. In most cases, controls for two metres are all on the left-hand side, and controls for 70cm are on the right. The left-hand tuning knob works on two metres, the right-hand tuning knob on 70cm. The volume and squelch controls, VFO, memory, call channel, priority function and 1MHz step keys also work this way. There are two of each, although some of them are secondary functions for simplicity...

You need only one power button, though, and this is found on the top right-hand side. Its opposite number is the SET button, which leads you into Icom's traditional 'tow-away' zone for lesser-used functions and control parameters.

The duplex, tone, low power, mute lock and memory functions, together with a few lesser-used functions, are assigned to individual buttons at the top of each five-button group.

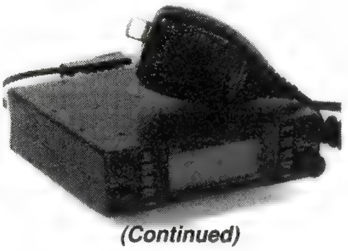
If you are at all familiar with Icom's established control layout, you shouldn't expect any untoward dramas with the IC-2340.

Everything works as you'd anticipate. In other words, even if the controls have been relocated, if you've used almost any rig since the landmark IC-2400A, you'll be able to drive this one in minutes.

Mind you, some things can tend to come as a surprise. The thoughtful person who'd had the rig before me had made sure the display would fill with

....☞

# IC-2340 REVIEW



*(Continued)*

very pretty flashing hieroglyphics and do you think I could get *rid* of the damned things without reading two-thirds of the book? They were extremely interesting to look at, but hardly useful if you wanted to use the radio!

It's interesting to ponder that gyrating display for a moment. These days, Icom (and Kenwood, for that matter) routinely program 'display modes' into their rigs. The idea is that the prospective purchaser sees the rig doing its thing on the stand and swoops on it.

Five or more years ago, data memory was so costly that we were lucky to get 20 memory channels in our new dual-band rigs. Now memory is so cheap and so easily come-by that we expect at least five times those 20 memories, and multiple operation modes to boot!

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Oh yes — when it arrived for review, not only was the display in 'buy me' mode, but both volume controls were wound fully clockwise with the mutes fully counter-clockwise.

Well, congratulations, whoever you are — not only did you manage to wake me up very smartly, you helped perform an audio stage and speaker destruction test I wouldn't have been game to try.

### The receiver...

I half expected the audio to sound ghastly after that unfortunate start, but not so.

Received audio was clear and clean, with plenty of high tones available. Some modern radios, in an attempt to make them sound 'better quality'. manage to achieve the exact opposite to the desired result by wiping out the high frequency received audio response.

Not so the Icom IC-2340. There wasn't exactly a preponderance of thundering bass, but the high tones were especially clear.

The speaker's on the top panel, too, so no problems at home. Used with an external speaker, you'd be extra happy with the receiver at home or in the car, as I found a better, enhanced base response that way.

A bigger receiver surprise, though, awaits the Australian purchaser when he or she turns the tuning knobs.

They're quite small but very manageable, and you can almost turn them *forever.*

Your book will tell you that you can tune four MHz on two metres and 10 MHz on 70cm. Don't believe it. Listen to crisp and sparkling AM on the aircraft band, great copy on the weakest of signals on two, and commercials way, way up.

Tune the VHF high-band commercials, listen to the wide-open spaces of the JA commercial band (from 300 MHz), up to and past 70cm to around 500 MHz.

Start again at 800 and just keep winding the knob. And do you know what? The damned thing *hears* all the way.

Now, after delivering a stern rebuke last time when the review IC-281's receiver spat the dummy when a pocket pager transmitter fired up in Queensland (I'm in Melbourne...), and causing terminal receiver overload of something vital, I am happy (and most relieved) to report that the IC-2340 did *not* suffer anything like the same amount of trouble from pagers.

In fact, I'd say its performance was, if anything, slightly improved over some recent Icom rigs, which is a sure encouragement.

A radio isn't much use to you if pager crud means you can't hear a station who has you Q5. But where one rig left something to be desired, this one shone. In the dreaded City Center test, the new Icom passed with flying colors.

Even my highest-gain whip couldn't send the receiver hunting, although there was some intermittent breakthrough on 70cm from nearby commercials.

Overall, though, a very pleasing result.

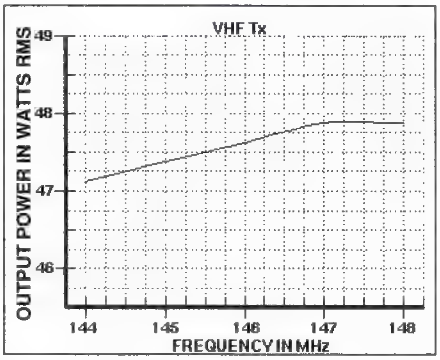
### The transmitter...

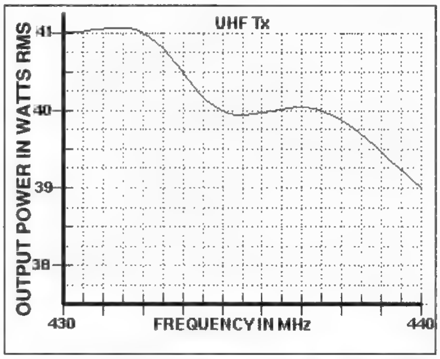
Sitting through the Neil Duncan audio test can be a harrowing experience. Neil is a demon for even the slightest 'miss' in the audio, and I suppose he can afford to be — listen to his stereo setup and you'll know he's a connoisseur of fine audio (among other things).

Woe betide the hapless operator with a poor signal if Neil's around.

But he listened (on simplex, of course), grunted and listened again as I carefully recited a child's nursery rhyme to him. (Anything for a laugh at a serious moment.)

Finally he said it: "Remember that old two metre rig you had a few years ago — the one which had the best communications audio I've ever heard? Well, this one's better. I hate to say it, but I simply





cannot fault it.

"That audio is quite amazing. You're mobile yet I hear no background rubbish at all (except for the kids), and I get crisp mid and top tones without any sibilants. Fabulous."

Power output is rated at 50 watts on two metres and 35 watts on 70cm, which is pretty standard fare these days.

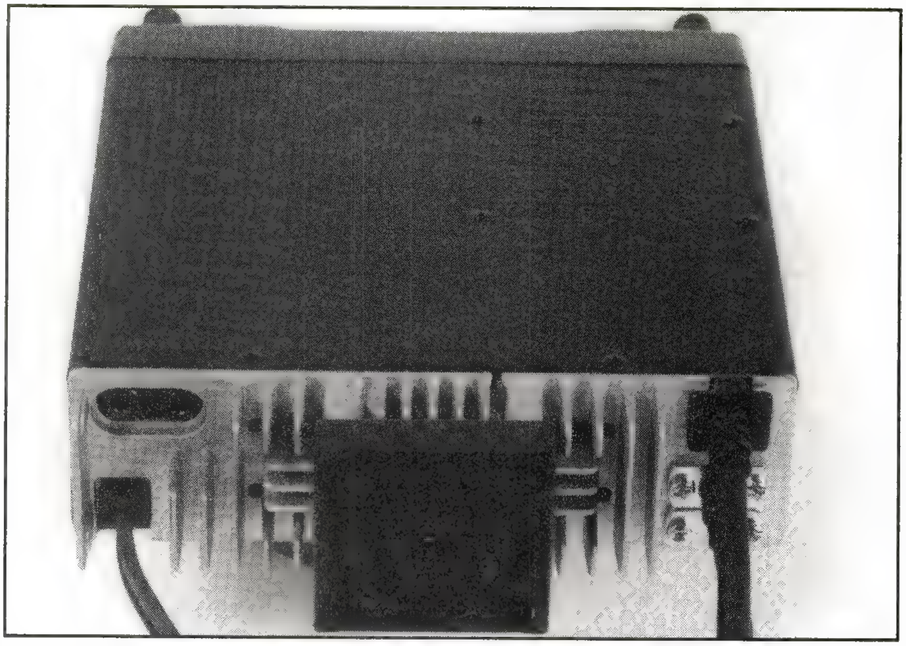
### Overall...

I'll let our technical editor relate his findings to you now, but first a couple of final comments in passing.

I keep wondering how the manufacturers can possibly improve on an outgoing rig each time a new model is released.

But somehow they do. This time, however, Icom has truly excelled itself, for this radio is greatly superior to the old IC-3230 which I reckon it has replaced.

The IC-2340 runs cooler than its predecessor (it has a fan), offers the user far more versatility, has a swag more memory channels, and is pretty darned easy to set up and use.



It isn't outrageously more expensive than its predecessor, it works well, and costs about 20 per cent less than the IC-2700, its remote-controlled stablemate.

The bottom line?

Well worth a closer look.

**Amateur Radio Action** thanks **Icom Australia** for the loan of the review transceiver.

## ARA TECH

### SQUELCH RESPONSE CHARACTERISTICS

Squelch response seems characteristic of many recent VHF\UHF FM receivers in both amateur service and also CBRS.

The difference in gate operation levels between 'threshold' and 'tight' are so minimal that the whole range is compressed to within a fraction of one microvolt and therefore inadequate for use in a high RF 'pollution' environment.

Threshold = 0.1 microvolts.
Tight = 0.2 microvolts.
Hysteresis = moderate.

***Note... Characteristics almost identical for 2 metres and 70cm bands.***

### RECEIVER FREQUENCY RANGE

VHF = 118MHz to 174MHz
UHF = 320MHz to 480MHz
UHF = Extended UHF range not specified.

### RECEIVER SENSITIVITY

See graphs for plotted receiver sensitivity for 12dB SINAD.

Note... VHF range includes AM (aircraft band) section between 118MHz and 135MHz. Air band segment measured for 12dB SINAD using test signal modulated 60 per cent with 1kHz tone.

### RECEIVER POWER CONSUMPTION

The IC-2340H operating from a 13.8Vdc regulated source dissipates about 11 watts (795mA current drain) when operating in 'stand-by' mode - dial lighting operating and mute closed. Transceiver case warms noticeably in this mode.

Drain with fan operating - 865mA.
Drain with full audio - 1,100mA.

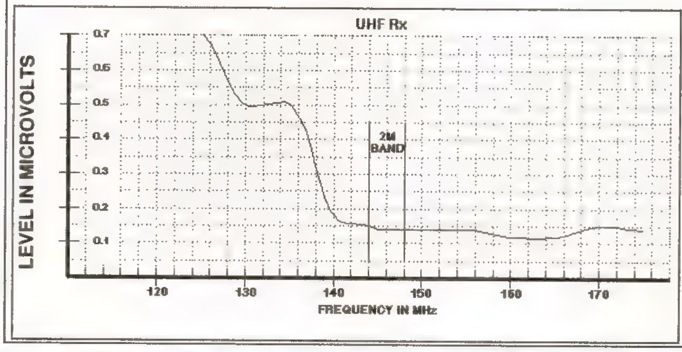
### TRANSMITTER PERFORMANCE

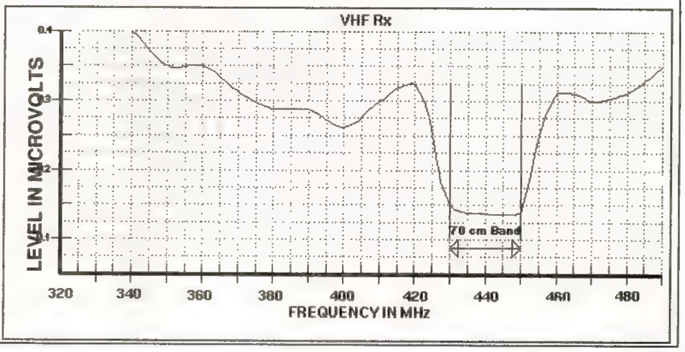
See graphs for transmitter power - VHF and UHF.

Current drains were almost identical range for range between UHF and VHF.

| | | |
|---|---|---|
| Transmit | High | 7.6 amps |
| | Medium | 4.1 amps |
| | Low | 3.1 amps |

**Microphone** - Electret condenser microphone.
**Modulation** - Crisp with plenty of mid range.
**Deviation** - 4.5kHz with 1kHz tone input.
4.9kHz peaks on speech.





### *Build your own 12v power supply for the...*

# SMART CW

*By Peter Philippa, VK2UPP and Peter Browne, VK2GFE*

***"If only it would operate on my 12 volt supply..."***

**I have heard that numerous times since publication of Neil Duncan's review of Smart-CW in the January issue. Well, I suppose if enough voices are raised action certainly must be taken. Okay! I got convinced!!**

Nearly every amateur these days has a 12 volt DC power supply available in the shack (12 volts sometimes means 13.8 volts under no load or 10 volts under load).

As argued with me by one or two amateur operators, it's more convenient to have their keyer operating on 12 volts because it means that it is portable, along with their transceiver. So, that means when they go mobile they can pack the keyer as well.

## Design criteria

Well, the thinking hat went on. The main cause of concern is that if Smart-CW is to be used on a 12 volt DC supply both in the shack *and* on the road its full functionality must be maintained — which means providing a negative voltage rail so that the RS232 interface to the computer port can be used.

Uh, oh!

To operate the RS232 interface chip (MC145406) a negative supply rail of at least -5 volts must be supplied, but preferably a voltage greater than -7 volts is desirable.

A load capability of up to about 100mA would also be needed.

It is also imperative that the unit operate over the variable range encountered in nominal '12 volt' supplies.

For example, in a vehicle the voltage may vary from 10 volts (in prolonged idle with the head lights on) up to 14.5 or even more volts on a extended journey without any accessories being used.

This meant scouting around a lot of design resources.

The first obvious choice is the popular voltage-inversion chippie commonly termed the '7660'. It is readily available and good value (my wife insists upon good value — 'cheap' from her perspective implies inferior!).

Well, closer examination of this little beauty reveals that it's really only good for 10mA, maybe 20mA on a good day! Umm, what else is there?

Various manufacturers have come up with some great invertor chips — there is even one that will provide the required 100mA with only two external caps.

There's a few problems, though: it's -5 volts only, it's not readily available and it ain't 'good value'.

Uh *hah*! Motorola has done it again, with the best solution found being its MC34063.

It looks great — an 8-pin chip (that's great 'cause we've got limited space), it's good value (our purses are *always* cost-conscious), it requires minimal external components (see purse comment!), and can drive up to 1.5 *amps* peak without an external switching device (see purse and space comments).

The Motorola data book doesn't divulge copious quantities of information about this device, but fortunately in my junk data I found a very comprehensive application note on the chip.

So, a few late nights of reading revealed its finer points and the brain got into gear.

Using a total of 20 items a circuit coping with the stringent design criterion has been met.

The other 'nice' bit about the design is that it is useful not only for Smart-CW, but in other situations where a negative voltage rail is required.

By altering the resistance ratios of R1 and R2 you can obtain quite a reasonable output voltage range as shown by the table below.

Note that for the 100mA output load current you should be able to get away without changing the other components in the component list.

If you require a greater current drive you definitely need to change the inductor so it has a greater current carrying capacity (the one used in the prototype has a current carrying capacity of less than 200mA).

**Refer Table 1.**

If you have difficulty obtaining a suitable inductor, why not have a crack at winding your own?

The fortunate thing about the inductor in this design is that it will be forgiving to copper diameter or 'inaccurate' iron density of the core.

I have a 'power' inductor of 220µH in my possession that consists of 40 turns of 0.5mm varnished copper wire wound on a ferrite toroid ring (unknown reluctance).

Out of interest I wound 40 turns of varnished copper wire (somewhere between 0.5mm & 1.0mm diameter) on an AM antenna ferrite rod and found no noticeable adverse operation — except for 'ringing' of the coil.

The ringing is caused by the fluxing of the magnetic field moving the windings (at approx. 40kHz).

To temper the ringing you can do what all the 'old hands' have done for many years — melt some candle wax and dunk the completed coil into the wax and let it cool; just ensure that you have something to secure the windings.

The recommended approach would be to purchase a toroidal ferrite core made for the job.

Suitable cores are available from places like Dick Smith and Jaycar.

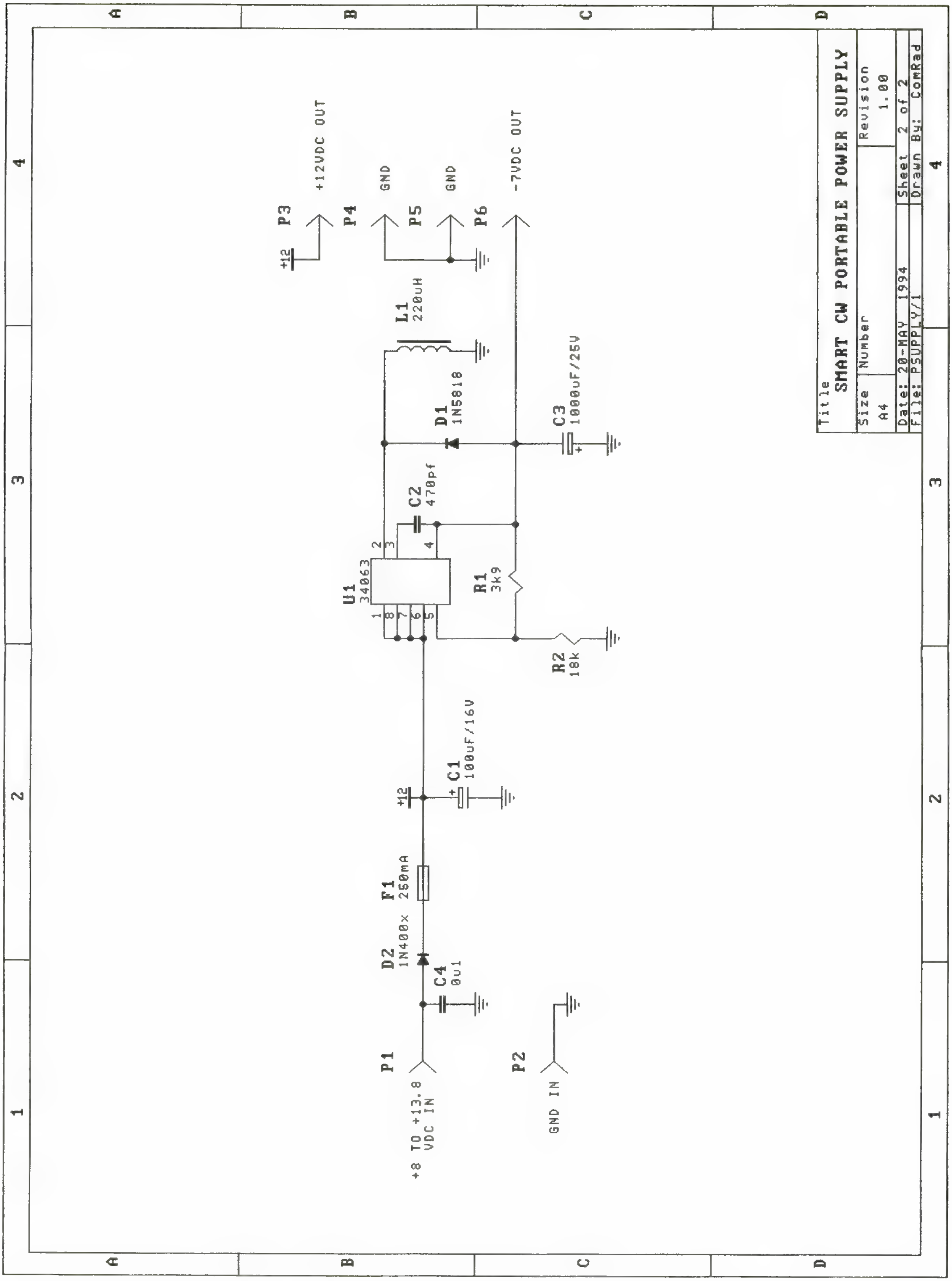
## The circuit

The MC34063 does all the thinking. It

....☞

**Table 1:** *Use these R1 and R2 values to generate different output voltage*

| Output Voltage | R1 | R2 |
|---|---|---|
| -5 | 1k2 | 3k6 |
| -7 | 3k9 | 18k |
| -9 | 1k | 6k2 |
| -10 | 1k3 | 9k1 |
| -12 | 3k | 27k |


Title
SMART CW PORTABLE POWER SUPPLY
Size A4
Number
Revision 1.00
Date: 20-MAY 1994
Sheet 2 of 2
File: PSUPPLY/1
Drawn By: ComRad
P1
+8 TO +13.8 VDC IN
P2
GND IN
C4 0u1
D2 1N400x
F1 250mA
+12
C1 100uF/16V
U1 34063
R1 3k9
R2 18k
C2 470pf
D1 1N5818
C3 1000uF/25V
L1 220uH
P3 +12VDC OUT
P4 GND
P5 GND
P6 -7VDC OUT
A
B
C
D
1
2
3
4

*Build your own 12v power supply for the...*

## SMART CW

(continued from previous page)

is described as a DC to DC converter circuit which can be used to step up, step down or invert DC voltages.

In this project it is configured for its inverting mode of operation.

Embodied within the chip is a reference voltage, a comparator (pin 5), an oscillator (pin 3) and the current-switching transistor (pins 1, 2 and 8).

A peak current detector is also available (pin 7), but is not implemented in this design.

To fully explain the operation of the device takes about 30 pages, but this basic overview may assist a little with understanding switching power conversion.

The oscillator in the chip creates a pulsing to the base of the internal switching transistor.

When the transistor is switched on the inductor is charged to saturation because it is connected to the positive voltage source.

Once saturated, the transistor is switched off, causing the inductor to discharge via the diode D1.

Note that it is the back EMF generated, and hence it is a negative voltage that is discharged into C3.

Once the inductor has discharged, the oscillator will put the switching transistor on to charge the inductor to saturation then the switching transistor is switched off and once again the inductor is 'reverse-discharged' into C3.

During all this process, the voltage level at the output is fed back to the chip via a resistor divider network made up of R1 and R2.

The internal voltage reference of the chip is set to 1.25 volts.

When the voltage present at the voltage comparator input at pin 5 differs from the internal voltage reference, the ratio of on to off time of the switching transistor is altered.

This feedback results in very good regulation of the output voltage. It is also easy to understand that if the ratio of R1 to R2 is altered, so too will the output voltage differ.

Because the whole operation of this circuit is dependant upon the switching of the power supply at a relatively high frequency, the possibility arises that RF may be imposed upon the supply leads to the circuit.

To minimise this possibility, C1 and C4 are used as bypass filters. Under CRO scrutiny, no ripple was observed using this filtering, while without it, ripple at the switching frequency was seen at peaks of up to 10mV.

Of course, to ensure your power supply doesn't suffer terminal stress under fault conditions, a fuse of no greater than 500mA should be installed. Note that in this design the fuse protects for fault conditions in the whole of the Smart-CW unit.

Also, to assist with power supply protection, diode D2 is in line with the positive supply lead.

This will prevent smoking of the circuit in the case of the supply leads being reversed when connected.

### Construction and testing

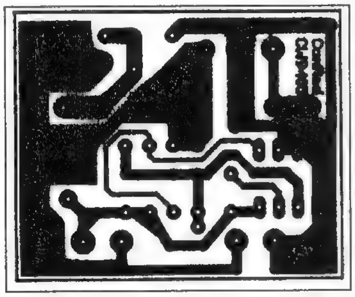
The first step is to insert the six PCB stakes, P1 through P6, onto the copper side of the PCB.

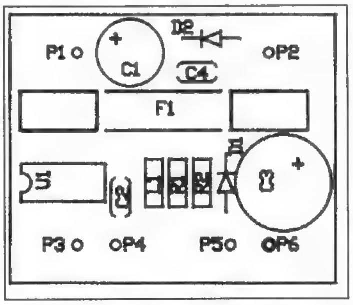
They are used as the interconnection between this PCB and the Smart-CW PCB, so before loading any components onto the PCB, place the circuit board with the tracks facing up toward yourself on the work bench and insert the PCB stakes into their respective locations and solder.

Now you can commence loading components on the other side of the circuit board.

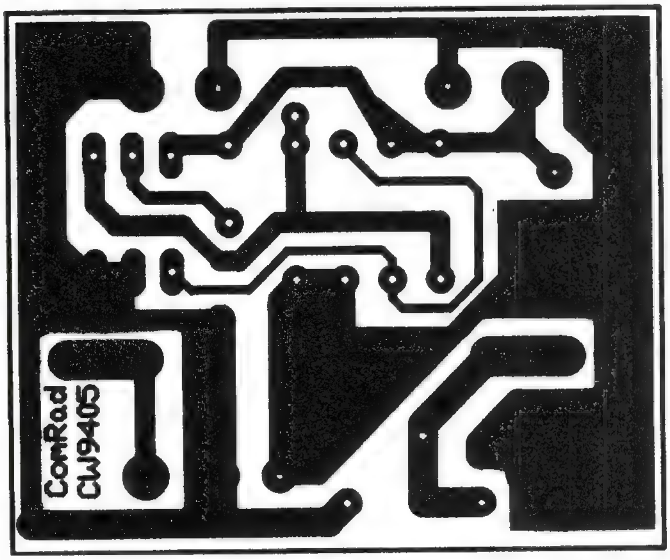
Follow basic construction techniques by populating the PCB with the lowest profile components first — namely R1, R2, D1 and D2. Then solder.

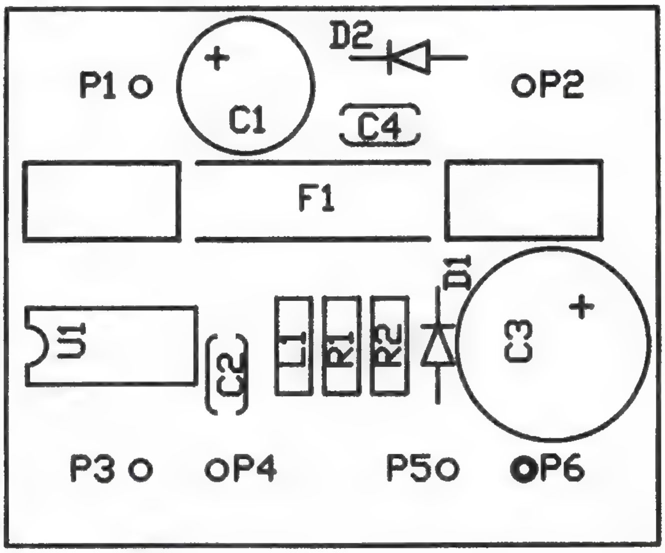
Next load the MC34063 — U1 and solder. You can now load the inductor, L1, and solder. Insert the two fuse clips — beware as some brands of fuse clips have a tag folded inwards on the clip. These folds prevent the fuse from sliding out the ends of the clips. If you are using these fuse clip types you should check their 'orientation' before soldering.





**Left and Below are component overlays on scale of 1:1 and 2:1.**





Next insert C1, C2, C3, C4 and solder.

Now put the 250mA fuse into the fuse clips.

That was quick, wasn't it?

The next step is to test that the circuit operates okay, so connect your shack power source positive voltage terminal to PC stake P1 and connect the negative terminal to P2 — ensure you have the polarity correct, otherwise the reverse polarity blocking diode D2 will prevent anything at all from happening.

Check the output voltage is around -7 volts DC between PC stakes P6 and P5, and that you find around +12 VDC between PC stakes P3 and P4.

If you observe a low voltage reading at the output, check that the resistors are inserted into their correct locations.

If you observe no voltage at all, then check for shorted or open circuit tracks.

## Installation

This circuit board is a replacement for the power transformer on the original Smart-CW unit — so if you have already built your Smart-CW kit, you will need to remove the power transformer from the Smart-CW circuit board.

This PCB can only be inserted into the power transformer location on the Smart-CW board one way due to the PCB stakes.

### COMPONENT LIST

| | | |
|---|---|---|
| **C1** | 1 | 100µf / 16V Electrolytic RB |
| **C2** | 1 | 470pf Ceramic cap |
| **C3** | 1 | 1000µF / 25V Electrolytic RB |
| **C4** | 1 | 0µ1 Mono cap |
| **D1** | 1 | 1N5818 Schottky diode |
| **D2** | 1 | 1N400x rectifier diode |
| **F1** | 1 | 250mA 3AG glass fuse |
| **F1C** | 2 | PC-mount fuse clips |
| **L1** | 1 | 220µH power inductor (*don't* use RF inductors!) |
| **P1-P6** | 6 | PCB stakes |
| **R1** | 1 | 3k9 1/4W 5% carbon film resistor |
| **R2** | 1 | 18k 1/4W 5% carbon film resistor |
| **U1** | 1 | MC34063 DC-to-DC converter |
| **PCB** | 1 | CW9405 |

Leave a gap between the boards so that air can circulate around the copper underneath the supply PCB.

You will need to substitute the power lead to the Smart-CW unit with some suitable connection wire for connection to your 12VDC power source.

Though the Smart-CW current drain doesn't demand high a current-carrying capacity of the wire, figure-8 cable was used for the prototype as the two cores of the conductor are kept neat for the 10 foot run to the shack's power source.

Connect the positive supply lead to the **active** terminal point and the negative supply lead to the **neutral** terminal point on the Smart-CW circuit board.

*Kits are available from ComRad Pty Ltd for $25 plus $4 p & p. Peter Philippa, VK2UPP, can be contacted on (049) 477 733 or Fax (049) 477 484.*

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G039A

YL FORUM...By Kirsti Jenkins-Smith, VK9NL

# FLATFOOTED MOBILE

*1986 was the year of Halley's Comet and the year we went to Dayton to experience the amateur radio version of the Haj.*

**Coming from Norfolk Island where the telephone had just been invented, at least the direct dialling type, I looked with wonder at the fellows in Ham-land. Not only one but often two or even three 'hand-helds' or what I used to know as walkie-talkies were hanging from these fellows' belts like so many six-shooters. Antennas sprouted in all directions and there was no doubt that this was indeed a gathering of communication experts, suitably licensed and with a lot of technical know-how. Impressive.**

Since then the humble walkie-talkie has come of age.

From being a regulated piece of communication equipment, it has evolved into today's mobile telephone, enabling even the most *un*technically-minded to walk and talk to their heart's content.

We know that today's user is hardly even aware that if it were not for radio there would be no mobile phone.

This may be why so many treat it as high security protected equipment and talk a lot of nonsense which eventually makes headline news, gratifying the scandal thirsty section of the population. 'Stupid git!' are the words which first come to mind.

Still, more and more people jump on the mobile band wagon. We can see the embryonic business executive lost in his phone call as he crosses the street. Will that bus catch him?

No, he makes it across, oblivious to the fact that he has been mere seconds away from a messy death. We see him lunching out, phone securely clasped to one ear.

Is it agreeable to the body to have its mind dislocated from the joys of the table, or will he end up with a rotten stomach ulcer? We see him on the resort beach.

Gone are the days when a white-jacketed waiter would bring a telephone on a long cord over to the guest lounging in the sun.

Now it is instant self service with the modern wonder.

We hope he is having a relaxing holiday all the same. He certainly needs it...

...because these days there is no escape from business, friends, husbands, wives or parents. Technology has done this for us (or *to* us) and we are quick to embrace the new toys.

The telephone ringing has always taken precedence over everything else. How many stubbed toes, cold dinners, interrupted conversations and nights of broken sleep can we put down to the telephone's ringing?

Somehow we have been led to believe that not to be there when the phone rings is tantamount to missing out on the one chance in a lifetime for eternal bliss.

Which, when you think of it, is pretty silly because most phone calls mean the opposite of bliss. Still, brainwashed is brainwashed and we would rather be reachable, just in case. Besides, we have also been led to believe that only important calls are made on the telephone and therefore, anyone who is seen to make a phone call while running to catch a bus must be of immense importance. The cynics giggle at the sight but there are also those who frown.

The mobile telephone is in imminent danger of being looked on as a 'yuppy toy,' which sensible men and women should steer clear of.

If you treasure your stress levels you would hardly wish to be inductively coupled to the office via the mobile phone 24 hours a day.

And, since nothing is purely beneficial, you would hardly want your brain to be inductively coupled to all that nasty RF. Who is to say what damage can be perpetrated in the old brain-box? All that, of course, is just bad press and teething troubles.

The mobile phone has many uses, personal security and emergency calls being just two of them.

Properly managed it could become as handy as the fax machine and the photocopier, without which we find it hard to function already.

Vandalised phone boxes would be just that — and in any case now overtaken by the technological high-fliers who can gain access to phone numbers and use them for their own private calls.

Many people are amazed at the sight of their phone bills already, and the new technology is hardly off the ground.

Meanwhile its users have been accused of 'showing off' (one of the deadly sins and hopefully just another passing phase).

Not so many years ago everyone was out to impress each other with talk of 'my computer.'

Those days have gone. Everyone who wants one can have a computer these days. And so, everyone knows that to use one requires minimal brain power.

Likewise with the mobile telephone. Once it becomes common to carry one around, nobody is going to be fooled into believing that someone with a mobile phone is of any significant importance.

It is estimated that by 1997 some 70 million mobile phones will be in use, so what's the fun in showing off something that everyone else also owns? But the time has come to decide who is boss, the phone or we.

The mobile telephone of today is roughly the size of a decent-sized cheque book.

Not quite down to wristwatch size, but smaller than the 'spook' radio of film-land only 40 years ago. (Agent X lowering his head to talk into a bible-sized gadget full of knobs and dials, strapped to his chest. Only HE knows that this is really a radio transmitter/receiver...)

But if you thought they'd make the modern mobile phone even more discreet than a cheque book, the latest news is that one or more companies hope to bring it down to credit card size in the foreseeable future. Unless we employ a little commonsense, that could be a spectacle to behold. Swarms of people engaged in small talk into the cup of their hand, or maybe direct into the breast pocket while they wander the city streets, bumping into each other in the process.

How many of them, I wonder, will realise who brought them to this pinnacle of self-esteem or idiocy, depending on whether you are a giggler or a frowner.

Do they give any thought at all to the telephone pioneers and the radio pioneers who laid the groundwork in order to finally bring the two technologies together in a product which can both isolate and communicate at the same time. A milestone has been reached.

Like it or not, no doubt the Flatfooted Mobile is here to stay.

**DICK SMITH ELECTRONICS**

new '94

# FT-11R Micro Deluxe 2m Handheld

YAESU

*2 year warranty*

One of the world's smallest 2m FM handhelds with a full-size keypad, the Yaesu FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams.

The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DMTF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided.

Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.

The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

Cat D-3640

**$699**

Shown approximately full size.

**Now Available!**

# Mobile Or Base, See Us First!

## Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceievers.
Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large back-lit LCD screen, two independant VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD).
Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation
An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.
Cat D-3275

YAESU

**$1895**

**NEW FOR '94**

**2 Year Warranty**

## FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions.
Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.
Cat D-3635

**$699**

**NEW FOR '94**

YAESU

**2 Year Warranty**

## FT-5200 2m/70cm Mobile Transceiver

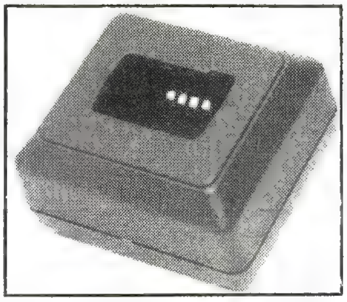
The FT-5200 ues the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band.) A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig ( under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.
Cat D-3310

YAESU

**$1499**

**2 Year Warranty**

## MasterCharger 1 Fast Desktop Charger



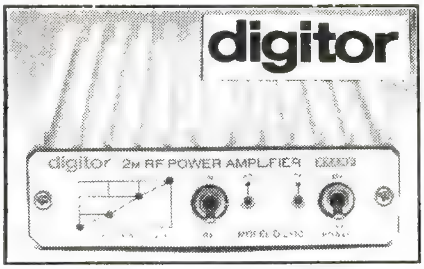
New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with -ΔV full charge detection) to charge NiCad batteries between 6V and 13.2V. Suitable for the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

Cat D-3850

***Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.***

**$169.95**

## 2m RF Power Amplifier



Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D-2510

**NEW FOR '94**

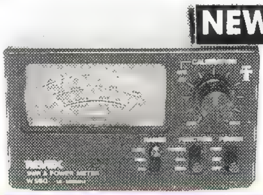
**$169.95**

## Revex W560N HF/VHF/UHF SWR/PWR Meter

Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525 MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

**NEW FOR '94**

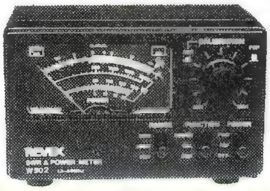


**$369**

*With PEP reading!*

## HF/6m Power/SWR Meter

A quality wide-band SWR/power meter with accurate PEP metering. Manufactured in Japan, it's very well constructed with an all-metal case. Features include a large, back-lit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC at 200mA. Revex model W502

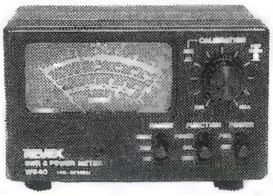


Cat D-1360

**$199**

## VHF/UHF Power/SWR Meter

A high quality SWR/Power meter suitable for amateur, UHF CB and commercial applications. High-quality Japanese construction assures you of maximum reliability. It has an all-metal case, large meter display, 140-525MHz coverage with less than 0.3dB insertion loss, and 4W, 20W & 200W power scales. Revex model W540.



Cat D-1370

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## 2m/70cm Magnetic Mobile

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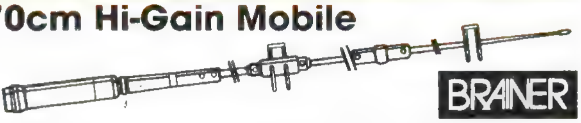

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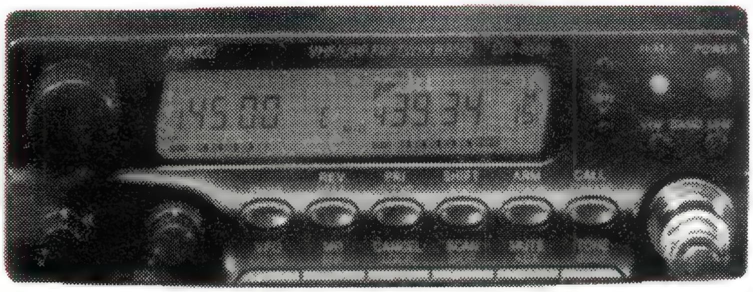

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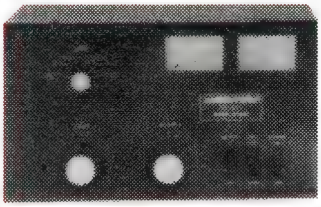

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### NEWS A LA CARTE

- JY7SIX is QRV by UK6MG May 29 through June 26.
- RZ0CZZ in PN78 Khabarovsk was active again 50.115/150 MHz split June 4 to 9. QSL JA0CGJ.
- VP5/W6JKV Jimmy Treybig was active May 28 to June 13 including EME.
- K6FV has announced a 50 MHz DX marathon to run from June 18 for one month to investigate DX.
- 9M6SMC has been on the air FSK mode on 50.014 MHz from OJ85ax since end of April.
- DX1HB/B has been returned to 50.008 MHz.
- JR6YAG beacon on 50.037 MHz has been refurbished and returned to air.
- Two Polish beacons SR5SIX on 50.023 MHz and SR6SIX on 50.028 MHz from KO02 and JO81 are on air.
- JY6ZZ beacon is signing from Jordan on 50.075 MHz following the departure of the JY7SIX DXpedition.
- V51VHF beacon on 50.018 MHz is off air for a callsign change.
- Z21SIX beacon has been heard in Malta by 9H5EE and 9H1AL.

### CURRENT EUROPEAN VIDEO TRANSMITTERS

| MHz | Location | Power |
|---|---|---|
| 48.2396 | Germany/Sweden | 100kW |
| 48.2422 | Portugal | 40 kW |
| 48.2461 | Norway | 30kW |
| 48.2474 | Germany | 100kW |
| 48.2497 | Norway | 30kW |
| 48.2500 | Swiss/Austrian | 250kW |
| 48.2526 | Norway | 60kW |
| 48.2561 | Norway | 100kW |
| 48.2604 | Germany/Norway | 100kW |
| 49.2240 | France sound. | |
| 49.7396 | Czech/Hungarian | 150kW |
| 49.7409 | RA1 | 10kW |
| 49.7448 | Hungary | 50kW |
| 49.7476 | RA3 Moscow | 240kW |
| 49.7500 | EM/EU/RA | 240kW |
| 49.7513 | Poland | 100kW |
| 49.7578 | RA1/RA3 Russia | 90kW |
| 49.7604 | EA/EU/RA/UL7 | 50kW |

Current at June 1994 by G3USF UK6MG.

### VALE KATASHI NOSE KH6IJ

In April 1994 **Katashi KH6IJ**, Hawaii's best-known amateur, passed away. When we had a good six metre opening, we often heard him out here.

He was worked by many of us during the opening on March 29, 1989.

### AROUND THE TRAPS...

Greetings from Kota Kinabalu Sabah...

Just wanted to let you know that we installed a six metre beacon on April 18, 1994. The beacon was donated by Richard Diamond, G4CVI, of South Midlands Communications Ltd, England when he came to Sabah on the Camel Trophy event last year.

The beacon arrived after a gestation period of approximately 1 year hi!! Its details are as follows:

**Beacon callsign:** 9M6SMC
**Power output:** 3 watts
**HAMSL:** 100 metres
**Antenna:** omni-directional ground plane
**Station ID:** Beacon transmits alternatively grid location OJ85AX/9M6SM
**Transmit frequency:** 50.014 MHz

We're very pleased to say that this may be the way to open up six metre operations here soon hi!

73 de Alfons, 9M6MU (Note: my packet address is via VK8DA BBS.)

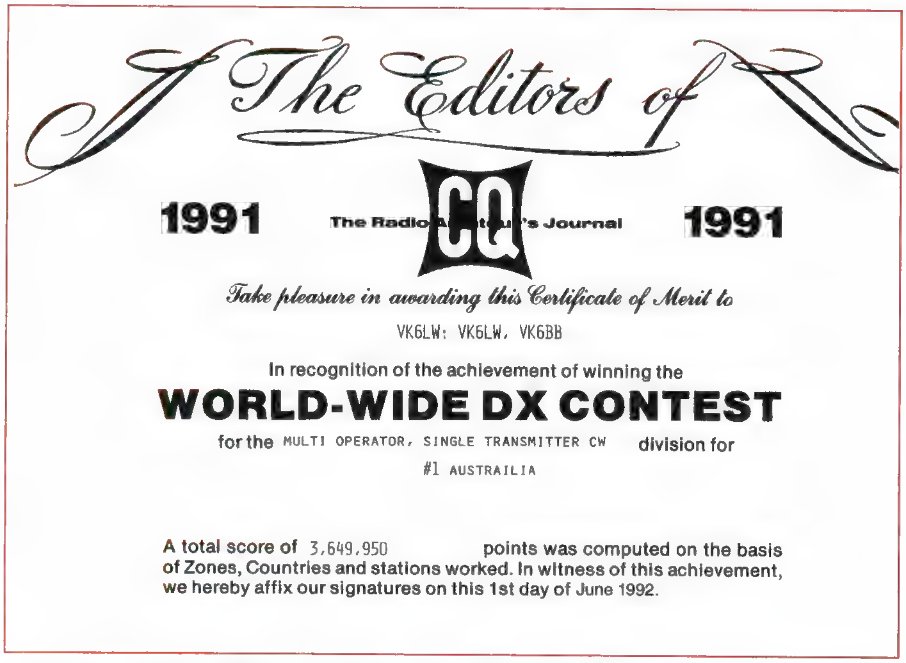
### THE LATEST DX IN JAPAN

**April 02**: B0BK.
**April 03**: 9M0A.
**April 04**: VK3SIX/B, 3OT, VK4IAM, APG, TL, CRT, LR, STS, YAR, PU, ZL3NE, TIC, ADT, 2UCG, 9M0AG.
**April 05**: VK4AFL, ZL4AAA, VK4SIX, VK3ALM, VK3CNX.
**April 09**: VK2ZXC, 2QF, 2ANS, ZL2TPY, 2KT, VK6RJ, VK4WTN, VK5BC, VK4JH, E28UT, E28DX.
**April 10**: VK3SIX/B, VK3OT, VK3LK.
**April 11**: VK4RO, VK4AFL.
**April 12**: E28DX.
**April 13**: A35MW.
**April 15**: FO3BM.
**April 16**: BV8BC.
**April 17**: VS6XMT, VK6JJ, VK6AKT, VK4PU, VK4IAM, VK2ANS, ZL4AAA, BV2FG.
**April 18**: VK3DUT, VK4KK.
**April 19**: VK4ZAA, VK4GMH, VK3DUT, VK4ZJR, VS6XMT, VK4FP.
**April 20**: P29CW.
**April 21**: A35MW.
**April 22**: BV2FI.
**April 24**: 9M6SMC/B FSK.
**April 25**: 9M6SMC/B.
**April 27**: 9M6SMC/B.
**April 29**: 9M6SMC/B.
**April 30**: 9M6SMC/B, BV2FG, BV8BC FM.
**May 03**: HL1MNN 51 MHz FM, DX1HB/B.
**May 04**: DX1HB/B, 9M6SMC/B.
**May 07**: BV2FG, BV2FI, BV2CD/7, VR2IH.
**May 08**: BV2KW, DX1HB/B, BV2AP, BV2FG.
**May 10**: DX1HB/B, VK3SIX/B, VK5ZBK, VK8VF/B.

This report from *Five Nine* June 1994 by JA1VOK.

### 50 MHZ EUROPEAN BEACON LIST

| FREQ. | CALL | ANT | W ERP | QTH /M | LOCATION |
|---|---|---|---|---|---|
| 50.000 | GB3BUX | turnstile | 15 | IO 93 BF | Buxton |
| 50.010 | SV9SIX | vert dipole | 30 | KM 25 | Iraklio |
| 50.013 | CU3URA | hor omni | 5 | HM68 | Terceira Is |
| 50.014 | S55ZRS | 5-el beam | NW | 10 | JN 76 HD Ljubljana |
| 50.020 | GB3SIX | 3-el beam | 100 | IO 73 TJ | Angelsey |
| 50.021 | OZ7IGY | turnstile | 20 | JO 55 VO | Toelloese |
| 50.022 | 4N0SIX | ? | | | |
| 50.023 | LX0SIX | ? | | JN 39 AV | Luxembourg |
| 50.023 | SR5SIX | ? | | KO 02 | |
| 50.025 | OH1SIX | two X dipole | 50 | KP 11 QU | Ikaalinen |
| 50.025.5 | 9H1SIX | groundplane | 7 | JM 75 FV | Attard |
| 50.028 | SR6SIX | groundplane | 10 | JO 81 | |
| 50.030 | CT0WW | dipole | 40 | IN 61 GE | Joao da Pesq. |
| 50.035 | ZB2VHF | 5-el beam | 30 | IM 76 HE | Gibraltar |
| 50.037 | ES0SIX | dipole | 15 | KO 18 PO | |
| 50.040 | SV1SIX | turnstile | 30 | KM 17 UX | Athens |
| 50.040 | UB7I | groundplane | 10 | | |
| 50.042.5 | GB3MCB | dipole | 25 | IO 70 OJ | St Austell |
| 50.047.2 | 4N1SIX | ? | | KN 04 OO | |
| 50.050 | GB3NHQ | turnstile | 15 | IO 91 VQ | Potters Bar |
| 50.051 | LA7SIX | 4-el beam | 18 | JP 99 LO | Tromsoe |
| 50.052 | PA3FYM | dipole | 9 | JO 22 NC | |
| 50.054 | OZ6VHF | X dipole | 25 | JO 57 DI | Oestervraa |
| 50.057 | TF3SIX | groundplane | 8 | HP 94 | |
| 50.059 | GB3RMK | dipole | 40 | IO 77 UO | Rosemarkie |
| 50.062.5 | GB3NGI | dipole | 25 | IO 65 PA | Londonderry |
| 50.064 | GB3LER | ? | | IP 90 | Shetland Is |
| 50.065.5 | GB3IOJ | halo | 10 | IN 89 WE | St Hellier |
| 50.067 | OH9SIX | ? | | KP 36 | |
| 50.070 | EA3VHF | 5-el beam | 1 | JN 01 | Lerida |
| 50.073 | ES6SIX | ? | | KO 37 MT | |
| 50.080 | SK6SIX | dipole | 1/10 | JO 57 QJ | Hoenoe |
| 50.087.3 | YU1SIX | dipole | 15 | KN 03 KN | |
| 50.089 | FC1MKY | groundplane | 10 | JO 33 OQ | |
| 50.100 | CT0SMB | ? | 0.25 | IM 59 SK | |
| 50.315 | FX4SIX | two X dipole | 50 | JN 06 CQ | Poitiers |
| 50.417 | FC1FNH | omni | 10 | IN 96 LD | |



The Editors of

1991 CQ The Radio Amateur's Journal 1991

*Take pleasure in awarding this Certificate of Merit to*

VK6LW: VK6LW, VK6BB

In recognition of the achievement of winning the

**WORLD-WIDE DX CONTEST**

for the MULTI OPERATOR, SINGLE TRANSMITTER CW division for

#1 AUSTRAILIA

A total score of 3,649,950 points was computed on the basis of Zones, Countries and stations worked. In witness of this achievement, we hereby affix our signatures on this 1st day of June 1992.

## Getting started in....

# CONTESTS

**By KevinSmith, VK6LW**

**There would probably be at least one contest in progress during every weekend of the year. These vary from the small domestic events and QSO parties, where the activity levels are fairly low, to the large major DX contests with very high levels of participation and subsequent high QSO rates and totals.**

**For the newcomer to contesting major DX events can be rather daunting, with lots of QRM and often several stations calling at once. A good method of gaining experience is by participating in some of the smaller contests first — it's not even necessary to have the rules as, normally, by listening to the stations taking part it's possible to work out the necessary exchange (eg 59001, 5929, etc).**Just making a few QSOs does not mean you have to send in a log to the contest's organisers, although of course they do welcome logs and check logs, however small, to assist with scoring.

The confidence gained by operating in these smaller events will help greatly when it comes to tackling a larger contest. Another excellent method of gaining experience is to become involved with a local club or group of contesters and take part in a multi-operator effort. You may only get to spend a short time actually operating at first, but the most important aspect is to watch closely the techniques used by the more adept operators.

Some years ago I undertook a WPX contest with two other operators who were both totally new to contesting, but by the end of the event their operating was really quite good and we finished with a very respectable total score.

Okay, so you've got to the stage where you feel confident of entering a contest in a serious fashion, but in order to maximise your effort it is important to choose the category carefully.

For example, if you have a well-equipped station with competitive antennas on every band then the all-band category may be attractive. In most of the major DX contests this requires a large time commitment of 24, 36 or even 48 hours during a single weekend.

Obviously to enter this section you will need a degree of stamina, and good knowledge of relevant propagation at various times on all the different bands throughout the course of the contest.

In addition, the ability to change bands at the appropriate times to maximise the QSO and multiplier totals is vital. However, for an inexperienced contester this is a lot to cope with, and a better option is to consider a single-band entry.

The overall antenna and station requirements are not so demanding in this category, the propagation predictions are restricted and the actual time spent operating is normally reduced.

Also, some of the DX contests now have a low-power section which allows stations not running more than 100W output to compete against each other on an equal basis.

This has proven a very popular category, and it applies to both single-band or multi-band entries in the single operator class. General operating on the various bands will give an indication of how efficient your station is. Normally the band for which the best antenna is available will be the band on which you are likely to be most competitive. It's most important before the contest starts to have some plan of action. A few notes may help — even an hour-by-hour projection of QSO totals and multipliers, or reminders of possible band openings to different areas. However, there needs to be a degree of flexibility in the way that you approach the contest in order to take best advantage of opportunities which may occur. Once the contest starts it's all too easy to get carried away working a large pile-up of stations and then forgetting about the all-important multipliers which are necessary to build a good score. By monitoring your progress during the course of the event it becomes easier to make the right decision at the right time.

In contests such as the WPX, where the multipliers are so plentiful, it's really not necessary to do much searching, particularly if you have a good signal.

It's more beneficial to call CQ and make as many QSOs as possible and the multiplier total will naturally grow.

In the CQWW and most others, the emphasis is on obtaining a balance between multipliers and QSOs. After a little practice it's relatively easy to run stations in a pile-up situation, basically just a question of getting a routine going.

It's actually much harder to search around the bands and dig out the rare multipliers, particularly so on the LF band. So if there happens to be a contest taking place it's always a good idea to use it as an opportunity to practice your search-and-pounce technique for working stations. I've found the most effective way to do this is to give your callsign once and listen.

Don't send the callsign of the station you are calling and don't send your callsign two or three times without listening in between.

The most likely result of the latter is that the station being called will have worked a couple of stations by the time you have finished calling! Imagine the roles being reversed; the last thing you need to hear in a pile-up situation is YOUR callsign (which you should already know!), or stations calling several times without listening. Once the station being called comes back you can then send his call and report.

Try to keep the exchange as short as possible without making mistakes. If you are not sure about something then ask for a repeat, and you'll find that most stations are keen to ensure that the exchange has taken place correctly.

All of this applies to both phone and CW contesting and, from this part of the world it's probably easier to achieve a good result in the CW section of a DX contest, as the contacts on the LF bands are often quite difficult and CW will often enable a QSO to take place where on SSB it may not have been possible.

### MODE MERITS ARE EVENLY BALANCED

On HF the relative merits of the two modes are evenly balanced. If you are keen to improve your CW skills contesting will help quite a lot to improve your speed, however the hardest aspect is probably getting used to the general level of QRM and several stations calling at once.

There are various CW contests held throughout the year where the speeds are generally not as high as in the CQ, ARRL or other leading events.

Entering these smaller events will greatly improve both your CW and contest technique.

Many stations are now using real-time computer logging programs in contests, which provide a number of advantages over the conventional manual logging and cross-check sheets, not the least of which is the time spent after the contest checking for dupes and generally sorting out the log before submitting it (with my handwriting that's not an easy task!). However, some stations have produced excellent results with a manual log, and the lack of a computer should not be a deterrent when considering entering a contest. It's fairly easy to keep a log and multiplier record as you progress and, as far as dupes are concerned, unless it's a multi operator effort, it's probably not worth the extra time to keep a dupe sheet, especially when the QSO total gets up to around 2000. Without a dupe sheet I've found my percentage of stations worked more than once is normally not more than around three to four per cent. Of course, these have to be marked clearly in the log and this has to be done after the contest. A good method of keeping the paperwork to a minimum after the contest is to log the calls on the appropriate log sheet during the course of the event. By doing this it becomes unnecessary to re write the whole log again.

### COMPUTER LOGGING MAKES LIFE EASIER

Computer logging probably makes the contest more fun — it's very easy to monitor your progress and identify areas that need attention, and it can cut down fatigue by sending all or part of an exchange using a few key strokes, and you don't have to be a touch typist either! If you become serious about contesting the computer logging method is probably the way to go, but I think for anyone starting out a manual log is quite adequate as the principals of successful contesting remain the same whichever method is used. As the current solar cycle declines the HF bands will not be as productive as in previous years. This is becoming fairly apparent on 28 and 21 MHz and, as the cycle approaches its minimum the all-band category is going to progressively become more difficult.

For stations in VK/ZL it's even more of a problem given our remoteness from the rest of the world. For the next few years the single-band section on one of the bands from 14 MHz down looks to be the best option of producing a competitive score.

Finally, I look forward to your comments and suggestions regarding contesting. If you have any recent claimed scores or results they would be most welcome, and please also tell me if there is any particular topic that you would like to see covered in future issues.

**For those who may be curious about Kevin's qualification to write a contest article, following are his recent results in major DX contests.**

| | | | | | |
|---|---|---|---|---|---|
| 1989 | CQ WPX | SSB | Multi Single | 1st VK | 2nd Oceania |
| 1989 | CQ WW | CW | All Band | 2nd VK | |
| 1990 | CQ WPX | SSB | Multi Single | 1st VK | 3rd Oceania |
| 1990 | CQ WW | CW | Multi Single | 1st VK | 2nd Oceania |
| 1991 | CQ WPX | SSB | Multi Single | 1st VK | |
| 1991 | CQ WPX | CW | 14MHz | 1st VK | 3rd World |
| 1991 | CW WW | CW | Multi Single | 1st VK | |
| 1992 | CQ WW | CW | 7MHz | 1st World | Oceania Record |
| 1992 | CQ WW | SSB | (VK6YS M.S) | 1st VK | 2nd Oceania |

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# DX & BAND REPORT

**At the top of the agenda this time is the news that Romeo has now lodged documentation at ARRL regarding his operation from North Korea signing P57RS some time ago. The documentation is in Korean (hardly surprising) and will require translation and a possible subsequent assessment by DXAC.**

I must say that I am happy that Romeo has done this, since his previous operations had always been accepted as valid for DXCC. It promises to be very interesting to hear what validity the documentation has. Keep your fingers crossed.

On another subject is the fax I received from **Nao**, **NX1L** (ARRL) that he and **Kan**, **JA1BK** were planning to activate the Marquessas and Australes Groups of French Polynesia. The interesting point is that Nao considers that there are grounds for two new DXCC countries.

You may also remember that Paul, F6EXV and Jackie, F2CW also felt the same way when they activated both groups a few years ago.

I remember in discussion with Paul at a Clipperton DX Club meeting that he mentioned how disappointed he had been when DXAC rejected their proposal for DX status for the two groups.

Nao, NX1L, in his fax outlines the main points of why he considers Marquessas and Australes both qualify as DX countries.

As is usual with Nao he is always very precise and provides not the actual proposal to DXAC but certainly the bones of what it would be based on. This will also be an interesting situation in terms of DXCC in due course.

As usual you are always advised to work first and worry later. (WFWL).

If you are really into DXing (and I assume you are if you read this column) the last few weeks have been very sad for many of us.

In my last column I reported that **Joannie KA6V/7** was very ill. In fact, she was back home from hospital with terminal cancer. It was, nevertheless, a great shock when DXers heard of her passing only a few days later.

The passing of **Geoff Watts**, the originator of the **IOTA** program, and the **DX News Sheet**, not to mention his membership of the **Hall of Fame** and a great SWL record, was widely reported.

In our own backyard the loss of **Jack**, **VK2CX**, an old friend of the 14,220/14,222 kHz DX net and an ardent DXer, was sad news.

**Colin**, **VK2PC**, also passed away a few weeks ago. He had been ill and off the air for some time. Before his illness he was very active on the 14,220/14,222 kHz DX net and I always found Colin to be a real gentleman. In later years I did my best to get many of his precious DX cards for him.

Many of you may not have known **Rene**, **HB9AHA** but he was a long time DXer, top of the Honor Roll member, but his passing is also marked here.

***'Sadly Missed'.***

I think this is wonderful example of how a few words can say everything, and I hope you agree.

## Peter 1 Island 3Y0PI

The good news is that many VK/ZL stations reported that they had received their QSL cards for the Peter 1 operation. So this is an example of how things *should* be done; a fast QSL is always welcome.

According to **Jerry**, **AA6BB** some 70 per cent of all cards received were in the mails on May 9. He thanks the following 3Y0PI QSL helpers for their assistance: **AB7AU**, **WJ7R**, **WJ7S**, **N7MCA**, **KF7SH** and XYL **Marie**, **KF5RU** and **XYL**, and **WZ7D**.

The **3Y0PI** book of some 230 pages is already a 'best seller' and is receiving very good reviews from the amateur radio world.

I am waiting my copy with baited breath and hope that in due course I can provide a short review here in ARA.

Among other things, of course, this DXpedition will go down as the most expensive ever undertaken in the name of amateur radio and in particular DXing. Only DXers and IOTA hunters 'need' this QSO/QSL. The going rate for each QSO worked out at US$4 per QSO, which was the 'each price' for every multi-band/mode QSO and for dupes. So it's worth thinking about... each of us knows these days that a US$1 enclosure for many DXpeditions is more or less worthless.

## St Paul Island CY9

**1.** It is reported that a group of five amateurs were to activate this rarish DXCC spot for four or five days during June. Main details are: each operator to sign individual callsigns **/CY9** viz: **N9JCL**/CY9, **K0SN**/CY9, **AA9GZ**/CY9, **WC9E**/CY9 and **WB9OBX**/CY9. The time frame for the operation was between June 10 and 19, and two stations were to run continuously on CW/SSB/RTTY.

**QSL Route**: Direct with one dollar.
**Tom Hellem, K0SN**
W6321 Two Mile Road,
Poterfield,
WI 54143
USA

**2.** If you missed Number 1, don't despair! A second group plans for an operation in August. The **West Island Amateur Radio Club** of Montreal hopes to sign **CY9CWI** (Club West Island) on all bands CW/SSB/RTTY. With declining high band conditions, more effort will be made to activate 40, 80 and 160 metres. Operators include **VE2AYU**, **VE2GTI**, **VE2JCX**, **VE2BTH**, **VY2OX**, **VE2SEI**, **VE2WHO** and YL operators **VE0YAK** and **VE2ZOO**.

**3.** If you missed operations **1** ***and*** **2**(!) there is yet another planned for September 19 to 25. Operators are **N0TG**, **AA4VK**, **WA4DAN** and **KW2P**. These operators have activated KP1, Navassa and KP5, Desecheo in past operations. No further details at the moment.

## Desecheo Island KP5

It is noted that the US authorities are now refusing permission to land on Desecheo due to difficulties on the island.

These difficulties are listed as 'pirates (presumably real ones) and undesirables.' In the last year some 400 rebels (many armed) have been removed from the island.

***Compiled by Jim Smith, VK9NS***
**PO Box 90, Norfolk Island, South Pacific 2899**

### ITU Day May 17

There was plenty of ITU activity around that day. Did you have a bit of fun chasing all those Spanish **EG** special event callsigns?

There were some good signals and I had little problem working many of the prefixes, snaring **EG6**, **7**, **8** and **9**. If you are unsure of who you worked of where to QSL try the following:

| | |
|---|---|
| **EG1ITU** | **EA1KK** |
| **EG2ITU** | **EA2CMW** |
| **EG3ITU** | **EA3CWK** |
| **EG4ITU** | **EA4BUE** |
| **EG5ITU** | **EA5OL** |
| **EG6ITU** | **EA6YX** |
| **EG7ITU** | **EA7ABW** |
| **EG8ITU** | **EA8BGY** |
| **EG9ITU** | **EA9TQ** |
| **EG1-7** | **Spain** |
| **EG6** | **Balearic Islands** |
| **EG8** | **Canary Islands** |
| **EG9** | **Ceuta and Melilla** |

HQ, United Nations: As promised, **4U9ITU** was also very active, with operators **IK1QBT**, **IK1HLG** and **IK1CJO**.

**QSL Route**: **I1YRL**

### DXCC notes

**Deletions**: With effect from March 1, 1994, the ARRL Awards Committee accepted the DXAC recommendation to delete **Walvis Bay** and the **Penguin Islands** from the DXCC Countries List.

The date of deletion co-incided with the date of the official handover of the two areas to Namibia.

**North Korea, P57RS**: As noted earlier, documentation has been received at ARRL, from Romeo Stepanenko for his operation as P57RS. After translation of the material, further processing will take place.

**DXCC**: At the end of April there were 541 applications (some 66,665 QSL cards) awaiting action at the DXCC Desk.

DXCC staff note that the application rate is still higher than that of last year, showing a rise of 16 per cent and a rise of some 38 per cent in the numbers of QSL cards involved.

The general trend is for applications to remain fairly steady but the number of cards received is increasing.

In 1991, for example, cards being received were around 9,000 QSLs per week and this is now at the 14,000 QSL card level.

### DXCC applications:

It should be noted that, with effect from August 1, 1994, only **Form MSD-505** (**194**) (or later versions) will be acceptable when applying for DXCC, either new or endorsements.

The older forms do not carry enough information, and this has been causing some problems. Now with this notice in place use of the older forms may result in your application being returned with no action.

**Pratas Island**: No further news at the moment on the DXCC status of the **BV9P** operations.

**Malpelo Island**: As noted previously, cards from **IK2RAO/HK0**, Malpelo are still not being accepted for DXCC credit.

**North Korea, P5**

Incidentally, outside the previous DXCC section for the moment, it is reported that **OK1DTG** has written stating that his **P5DTG** operation was not licensed and cannot count for DXCC.

The above statement, if true, begs the question, ***WHY OPERATE*** ?!?!?

### Rwanda 9X

It is good news to hear that, despite the horrendous events in Rwanda over recent weeks, **Paul**, **F6EXV** was able to flee the country with his equipment and logs intact. At the moment he is in **9Q5**, **Zaire** signing **9Q5EXV**. There are no further details available at the moment.

### Special event stations D-Day

June 6, 1994, is the 50th Anniversary of the D-Day landings by allied troops on mainland Europe. The second front had started.

For those of you old enough to remember it, D-Day was special. It was the day that we in Europe felt that, finally, an end to WWII was in sight.

The sheer logistics of the wartime event is mind-boggling. Even in my northern Scottish location of Aberdeen, as school kids we had come to know the back-up collections of armour, planes, troops and training areas.

It is fitting that the amateur radio community should remember this very special day. Without communications at all levels D-Day would have been an impossibility.

**LUXEMBOURG**: **LX50V** will be active 6-12 June to celebrate the 50th Anniversary of D-Day.

**QSL Route**: **LX1NO**

**TM6JUN** and **F6REF** will be active during the month of June. **TM6JUN** from Utah Beach during June 4-7.

**F/ON6JUN/P** will be active from the Pegasus Bridge area — a strategic landing point. A number of **ON** stations will operate and a special QSL card will be available from **ON6SI**.

**Canada**: Canadian amateurs are permitted to use the following prefixes for the period May 28 to July 28, 1994 to commemorate D-Day. Thanks to CARM for the following info:

| | |
|---|---|
| **VA2** | **XK2** |
| **VA3** | **XK3** |
| **VE1** | **XL1** |
| **VE2** | **XL2** |
| **VE3** | **XL3** |
| **VE4** | **XL4** |
| **VE5** | **XL5** |
| **VE6** | **XL6** |
| **VE7** | **XL7** |
| **VE8** | **XL8** |
| **VE9** | **XL9** |
| **VO1** | **XO1** |
| **VO2** | **XO2** |
| **VY1** | **VG1** |
| **VY2** | **VG2** |

### Jordan JY

A multinational group was active in the Kingdom of Jordan from May 29 until June 27. Activity was promised on all HF bands with a special effort on six metres.

| | |
|---|---|
| **JY8JD** | **G0JHC** |
| **JY8IC** | **GJ4ICD** |
| **JY8OX** | **G3KOX** |
| **JY8VA** | **DL7AV** |
| **JY8ZC** | **G4CCZ** |
| **JY8ED** | **G3SED** |

**QSL Route**: via home callsigns

### Yemen 7O

**Robert N4GCK** has reported that he has received permission from the Yemeni authorities to operate **7O0CW** during July 1994. It took three years and he was helped by a Saudi friend. He will try to operate for a period of four or five days.

**NB** With recent events in Yemen it is hard to see that this permission will be honored. However, we shall see what happens, but Robert deserves our thanks for his efforts. 7O is still very rare and I will give more information as soon as it comes to hand, so stay tuned.

....☞

# DX & Band Report

## CQ Hall of Fame

Four contesters were inducted into the **CQ Magazine DX and Contest Hall of Fame** at Dayton. They were:

**John Thompson W1BIH/PJ9JT**
**Atilano de Oms PY5EG**
**Herb Becker W6QDI** (note this is a posthumous award)
**Charlie Mellen W1FH**

Congratulations to all concerned.

## Colvin Award

It has been announced by **David Sumner**, **K1ZZ**, Executive President of the ARRL, that the league was the beneficiary of an insurance policy on the life of Lloyd Colvin, W6KG.

Lloyd was remembered in this column some weeks ago and, of course, was well known as part of the YASME team of Lloyd and Iris.

According to the release, the proceeds of some US$150,000 has now become available to the league.

It was Lloyd's intention that income generated by this endowment be used to further the hobby of amateur radio.

At this early stage there are no details on how the **Colvin Award** will be administered.

However the ARRL will proudly honor Lloyd's memory by fulfilling his intent.

"During his lifetime Lloyd, W6KG made great personal contributions to international friendship through amateur radio.

Through the Colvin Award these contributions will continue in perpetuity," said Dave Sumner.

## Scarborough Reef

An application has been filed with DXAC in respect of Scarborough Reef, which lies in the South China Sea at 15.07°N 117.51°E.

The reef is claimed by **BY** — the Republic of China.

In recent weeks a plane was chartered by **DL5VJ** and **OH2BH/VR2BH** to do a survey of the reef. Some 45 minutes were spent in the area, several photographs were taken and assessments made of landing possibilities and the like.

According to the report, with the exception of several rocks the narrow belt of the reef is totally under water.

Therefore if the reef were activated then DXAC would have to make a decision on whether this tiny speck of land (in bits) should be a new DXCC Country.

This sounds very similar to Minerva Reef with minimal land above sea level and the amount of land being available only at low tide. The amount of land available at low tide is also a variable, depending on the time of year etc. Limited operating time and other factors may well rule out this one.

My vote would be no, or let's do a deal: re-instate Minerva Reef which has a larger area above low tide (again with changes due to time of year etc). *Then* make a new one of Scarborough.

## Chad TT8

Good news is that **F5OIF/TT** hopes to have a new callsign **TT8PS** as you read this. He hopes to be very active on all HF bands for about three months. No information on QSL or DXCC status of this one. WFWL.

## Trinidade PY0T

**John**, **PY0TUP** continues to be very active on 20 metres SSB, usually around 14,260 kHz — the IOTA channel.

The best time for me is my morning, around 1930z or so, and he was S9 long path the other morning. I telephoned a few VK stations to alert them and gradually a few are getting through.

This is still your best chance *ever* to work Trinidade. So my advice is keep an ear on 14,260 kHz plus or minus a kHz or so.

**QSL Route**:
**PY1UP**
Joao B Guimaraes Mendonca,
PO Box 108674,
Alcantra,
CEP 24621-970, Sao Goncalo
RJ, Brazil

## Guernsey GU

This is always a tough area but I hope you caught up with plenty of activity during June from **GU/DL6ET** and **GU/DL9YAJ**. They promised activity on CW/SSB and RTTY with an emphasis on the WARC bands.

**QSL Route**: home call via the bureau is okay.

## Late QSL

**VK3DBI** reports that he received a QSL card from **Pavel**, **OK1AIA/YA** the other day. The QSO was back in April 1992 and Pavel is *now* QSLing. If you need this card here is the address to try. Afghanistan is pretty rare these days...

**OK1AIA**
**Pavel Sneider**
PO Box 69
Praha 1
Afghanistan

## CQWW CW weekend

As I get this DX Report into the mail to meet the next deadline, in a few hours time — around 26 hours or so — bedlam will reign in the CW ends of the various bands.

CQWW CW weekend is with us again, and as usual a great deal of activity is expected from many DXCC countries. How nice it is to see that Albania will be in there with a group activating the ZA callsign. Also **Jim N6TJ** will be back on **ZD8, Ascension Island** which is quite a rare one on any mode. Note also that many of the countries not usually readily available on CW will be active during the weekend. A great chance to increase your CW total.

I hope you enjoyed the contest.

## Low-band activity...

I am now back on 80 and 160 metres with a vengeance (more or less!) and band conditions have been quite good on occasions. Certainly these days, to beat the poor propagation on the higher bands, one really needs a minimum of reasonably good 40 metres capability. There is plenty of action.

There have been several good openings and, in fact, I have just managed a solid CW QSO with **Gene**, **TL8NG** on 80 metres at my sunrise this morning. 160 metres is always a challenge, and **Adriano**, **J79W** was a new one for me on 160 metres SSB. USA east coast stations are good copy here at their sunrise.

*So that's about it for the moment, the weather has been great and we have tidied up on some antenna work around here.*

*To the many who keep me informed by fax, letters or whatever, many thanks. A special thanks is due to the various DX outlets who keep the DXers up to date:*

**QRZ DX, Les Bacores DX, EA DX Bulletin (URE), JA-59 Magazine, JA-DX News, RSGB DX Newsletter, DXpress, W6GO/K6HHD Managers List, Lynx DX Bulletin, Les Bacores DX, Long Skip, etc.**

*73 from Jim, VK9NS*

# ISLANDS ON THE AIR (IOTA)

**By Jim Smith, VK9NS, PO Box 90, Norfolk Island, South Pacific 2899**

**The last few weeks has seen Oceania in the IOTA limelight with quite a bit of activity from various areas. Propagation has been diabolical to say the least, and for this reason a planned trip to Melville Island OC-173 was abandoned.**

Another new island OC-197 was activated by an Indonesian group and, although I worked **YE3I** on 15 metres, their signal was rarely above S2 or S3. Not sure how Europe got on, but I know that stateside stations were having a hard time. A couple of very rare African IOTA numbers were also activated and, despite apparently poor propagation, signals from **S79CK/C** and **S79CK/D** were very good during long path openings starting at around 0400z. I think most of the VK/ZL island chasers got through. It is also nice to hear a few more of the VK/ZL stations picking up some interest in IOTA.

With summer around the corner in the northern hemisphere, there has been an increase in activity from EU and NA, but there is no doubt that band conditions have made things difficult at times.

Here I would just like to pause to comment on Geoff Watts once again. 20 years of producing the **DX News Sheet**, 30 years of producing an authoritative prefix/zone listings for DXers, and a quite incredible SWL record on a par with our beloved Eric Trebilcock (a silent key for many years ago now), membership of the Hall of Fame and so on, should be enough. But to start IOTA some 30 years ago was a real move of vision. Having been there and done that, he cited poor band conditions, DX getting scarce, really new countries a remote possibility, top DXers having worked everything, as the reasons for his new born — the IOTA Program.

The following have been worked from VK/ZL unless specifically noted.

| | | | |
|---|---|---|---|
| *AF-026* | *S79CK/C* | *Astove Island* | *QSL I4LCK* |
| *AF-033* | *S79CK/D* | *Desroches Island* | *QSL I4LCK* |
| *AF-069* | *EA9LZ/P* | *Perejil Island* | *QSL EA9LZ* |

NB a very short operation, but a new IOTA number; not worked in the Pacific as far as I know.

| | | | |
|---|---|---|---|
| *AS-004* | *ZC4MT* | *Cyprus/UK Sovereign Base* | *QSL CBA* |
| *EU-037* | *SM5JE/7* | *Oland Island* | *QSL SM5JE* |
| *EU-038* | *PA/F5KBF* | *Texel Island* | *QSL F5SSM* |
| *EU-042* | *DK8OL* | *Sylt* | *QSL CBA* |
| *EU-057* | *DL3KZA* | *Rugens* | *QSL DL3KZA* |
| *EU-100* | *TK7I* | *Cerbicales* | *QSL F5JYD* |
| *EU-101* | *I3THJ/IL3* | *Venezia* | *QSL IK3ABY* |
| *EU-104* | *TK7I* | *Sanguiraires* | *QSL F5JYD* |
| *EU-125* | *OZ/DL1AZZ/P* | *Mando Island* | *QSL DL1AZZ* |
| *OC-009* | *KC6SD* | *Palau Island* | *QSL K7ZSD* |
| *OC-077* | *KH8BB* | *Manua Island* | *QSL CBA* |
| *OC-169* | *A35MW* | *Lifuka Island* | *QSL VK2BEX* |
| *OC-194* | *VK4ANU/2* | *Mutton Bird Island* | *QSL DL8NU* |
| *OC-195* | *VK4ANU/7* | *Flinders Island* | *QSL DL8NU* |
| *OC-197* | *YE3I* | *Bawean Island* | *QSL YB3FNL* |
| *NA-029* | *KA2PHQ/VY2* | *Prince Edward Island* | *QSL KA2PHQ* |
| *NA-043* | *XF3OZ* | *Cancun Island* | *QSL CBA* |
| *NA-089* | *N5UR/C* | *Chandeleur Island* | *QSL N5UR* |
| *NA-089* | *WX5L/C* | *Chandeleur Island* | *QSL WX5L* |
| *NA-089* | *W5ZPA/C* | *Chandeleur Island* | *QSL W5ZPA* |
| *NA-089* | *W5FKX/C* | *Chandeleur Island* | *QSL W5FKX* |
| *NA-101* | *J79W* | *Dominica* | *QSL IK2GNW* |
| *NA-149* | *HH6JH* | *Ile A Vache* | *QSL HH6JH* |
| *SA-010* | *PY0TUP* | *Trinidade Island* | *QSL PY1UP* |

Note: see DX Column for full address of PY1UP

| | | | |
|---|---|---|---|
| *SA-036* | *P43A* | *Aruba* | *QSL CBA* |

Note the following changes in future IOTA credit due to Penguin Island deletion. Contacts with the Penguin Islands after February 28, 1994 at 2200z (midnight local time) will count as AF-070. This is a new AF number allocated for Namibia, Atlantic Coast South Group. eg QSOs with V59PI count for this new AF-070. All QSOs with the Penguin Islands prior to the above date/time count as AF-055. eg QSOs with ZS0X etc.

### NOTES AND COMING UP

- **NA-008** Ellesmere Island promises to be available for a couple of months due to a scientific expedition to this rarish area. Callsign is **VE8RAF** and it is expected that activity might be a bit limited due to work load.
- The expected activity by **HA0HW**, from Rong Island, one of the Cambodian islands, was cancelled as permission could not be obtained from the military.
- The expected activity from **SA-020** Salut Island seems to have come to naught — at least I have not heard any QSOs.
- **OC-173** Expected activity by VK4ANU/8 from Melville Island was cancelled due to very poor propagation conditions. A pity as I needed this one hi!
- NA-*** Herschel Island in late July — look for **VY1AU**. Dates given are 23 to 28 July. No further details at the moment.
- OC-*** Liuciyu Island late June look for **BV0L**.
- OC-*** Mal **VK6LC** is talking about the possibility of activating the Edward Pellow area.

So keep an ear on 14,260 and 21,260 kHz, as there is always something going on even if signals are often weak.

### IOTA HONOUR ROLL AND IOTA ANNUAL LISTINGS

I hope that by next year VK and ZL stations will be a bit more prominent as there is no doubt we are very thin on the ground right now. There is only one ZL listed with the 400 plus needed to get on the Honor Roll. Congratulations to **Dusty, ZL2VS** for his 430 total.

I hope to at least add the VK9 prefix to next year's Honor Roll listing — that is if my last submission is okay. My current total of 302 gives me place number 213 in the 1994 IOTA annual listing.

How are you all getting on with those log checks and island totals??

We would like to hear from you! There must be dozens of VK stations with well over the 100 plus islands confirmed.

# USER AUTHENTICATION FOR AMATEUR RADIO PACKET BULLETIN BOARD SYSTEMS

**This is a discussion paper regarding the authentication of users of Amateur Packet Radio Bulletin Board Services. The object is to promote as much informed discussion as possible on an important aspect of Amateur Radio.**

*Doug Rickard VK4ZDR Q VK4DIT.GOLD.QLD.AUS.OC rickard~qut.edu.au*

**The Amateur Radio Packet Radio service has advanced rapidly over the last few years. Originally it started out as a few interested amateurs with computers connected to amateur radio equipment. Not only could they swap messages directly between one another, but were also able to provide a message forwarding facility so that messages for a remote destination could be forwarded from one station to the next until it finally reached its destination. It was also relatively easy for each operator to peruse the message whilst forwarding it on.**

As the number of packet radio stations proliferated this style of operating became more difficult.

Firstly, as the number of operators using a single frequency increased, the efficiency of that channel dropped remarkably because of interference and collisions.

Secondly, the actual number of messages being forwarded rose to the point where it was no longer possible to do the forwarding manually, and automatic systems were introduced. Thirdly, for the system to work it was necessary to dedicate a computer and radio transceiver almost full time to that function alone, an expense which most radio amateurs could not justify.

The overall result of these problems over the years was the development of a new style of packet radio.

This new system is based on a high speed backbone wide area network (WAN), to which are connected a number of lower speed local area networks. It is common these days that instead of each packet operator connecting to the actual backbone network, they instead connect to a local 'concentrator'.

The advantage of this approach is that the 'concentrator' is the only system that need be on continuously.

If forms part of a 'store-and-forward' system. Users can connect to the 'concentrator' only when they wish to send or receive messages. These 'concentrator' nodes are today called Bulletin Board Systems (BBS) after their land line based cousins, or Packet Bulletin Board Systems (PBBS). PBBS systems communicate on one dedicated port to the high speed backbone network, and another port, usually on a different frequency, is shared by all users wishing to use that particular PBBS.

An attempt is made to organise PBBS to service a fixed geographic area, although in some cases multiple PBBS do exist sometimes catering for differing needs.

Radio amateurs wishing to use packet radio usually register with a PBBS system near to them, and this becomes their "Home BBS".

All their outgoing messages are sent via that PBBS, and all messages addressed to them are stored at that PBBS until such time as they read and delete them.

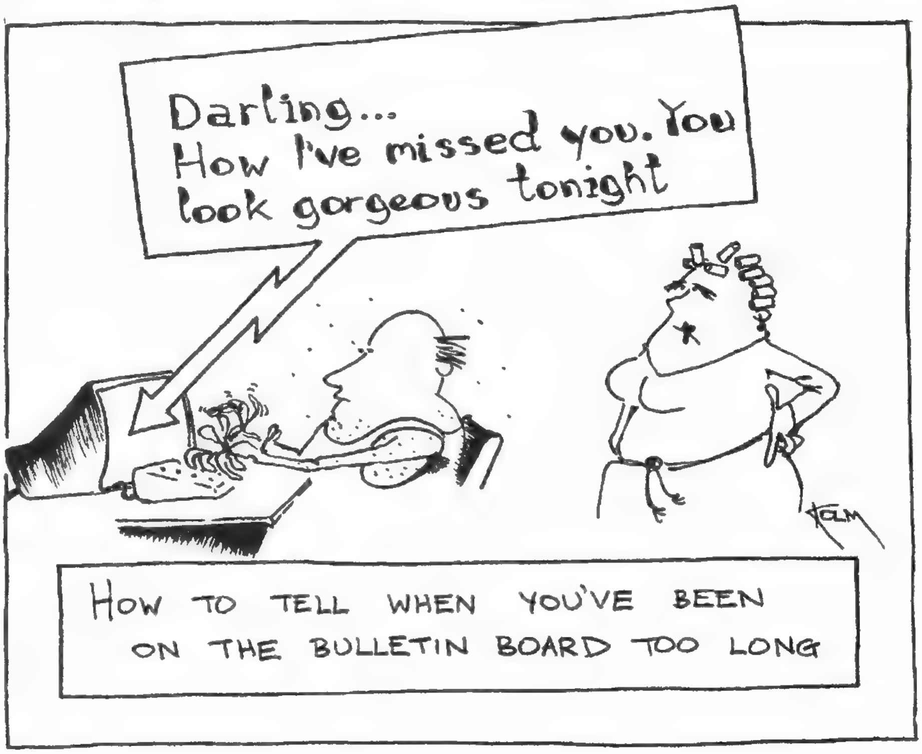
This type of system has worked reasonably successfully for some time. There are two major problems, however, which have not been resolved, and which are becoming of increasing importance.

The first of these problems has to do with the legislative authorities which control the amateur radio service.

In general these authorities have decreed that any station forwarding a message was responsible for the content of that message, even if they did not originate it.

### USERS MASQUERADING AS "OTHER USERS"

The second major problem was that in some cases certain users of the PBBS system were masquerading as other users and sending out messages in the name of the other user. This was possible because the PBBS system relied on the integrity of the user station to correctly identify itself. It was up to the user to insert their own callsign into the packet software.


Darling...
How I've missed you. You look gorgeous tonight
HOW TO TELL WHEN YOU'VE BEEN ON THE BULLETIN BOARD TOO LONG

It was thus very easy for a malicious user to insert an incorrect callsign.

Recent disturbing cases of this have occurred in VK2 and elsewhere in Australia.

These two problems have been concerning the amateur radio legislative authorities around the world for some time.

As the packet radio backbone goes to higher and higher speeds in order to transmit the sheer volume of traffic that exists today, it is recognised that it is no longer possible to have each forwarding station peruse the content of each and every message and to be responsible for it.

Discussions in the USA to address these issues, particularly between the ARRL and the FCC, have come up with a proposal which will dramatically alter the current mode of operation of the PBBS system.

The proposal is that forwarding stations should not be held responsible for the content of messages passing through them, on condition that they can verify who really is the originating station.

In the case of PBBS, the proposal is that provided the PBBS can guarantee the authenticity of a PBBS user, then the user and not the operator of the PBBS will be held legally responsible for the content of messages. This means that all PBBS will be required to implement a method of authenticating the PBBS users.

Most people are aware of the 'Username/Password' system used to authenticate the users of large computer systems.

Unfortunately this simple system is not suitable for use by radio based PBBS systems because the radio link is essentially a 'broadcast' system open to everyone, whereas the normal computer terminal, even if not totally secure, is at least not a broadcast system.

In a radio broadcast system, if a user were enter a password which was then transmitted, anyone who wished to could capture that password and reuse it whenever they desired to impersonate the original user.

There does exist systems, however, which do not require passwords to be broadcast over the radio.

Many of these are based on the Kerberos (1)(2) authentication system developed as part of Project Athena at MIT (3).

Typically, when a user wants to log into a PBBS they will send a login call, together with their callsign.

The PBBS will look up its password file to find the registered password for that callsign. It will then use that password to encrypt some special string (which will include a number of randomly generated sequences, as well as a time stamp), and then send that encrypted string to the users system.

The users software will ask the user for their password, and by applying that to the received string will be able to decrypt that string.

That decrypted string will then be sent back to the PBBS where it will be compared with the original string. If they match, and the time stamp is within an acceptable window, then there is a reasonable likelihood that the user is whom they say they are.

A real system would be far more complex that this, but it can be seen that such a system does not require the password to be passed over the radio link in either plain text or encrypted form.

The inclusion of time stamps deters the later replay of authenticators, but does require a reasonable degree of synchronisation of the time-of-day clocks on both systems.

In the USA, the FCC (4) has decreed that such a system requiring authentication of PBBS users will be required to be introduced by 01-June-1994.

If the PBBS operator does not, or cannot, authenticate the PBBS users, then the PBBS operator will be held responsible for the content of messages.

As PBBS operators start to be held legally responsible for message content, we will find that the number of PBBS operators will reduce.

Only those PBBS operators that are prepared to implement a legally acceptable authentication system will be allowed to operate.

Operating a PBBS will no longer be an ego trip, but will be a legally responsible position.

....☞

## BUT THEN AGAIN...

*It will be a sad day if this hobby has to go to such lengths as using passwords to regulate BBS operations..........what happened to the old adage of showing people respect and getting the same in return!*

*Sysops communicate with Users for a mutual understanding on BBS operations by the Users. Those Users who fail to abide by any reasonable request to act in a responsible manner in using BBSs are simply excluded or reduced to Guest User status.*

*If this system was applied, no password access is needed at all!*

*How can Mobile or Portable Packet stations operate with a password system?*

*Operating as a Mobile/Portable station will not be possible at all unless you are staying in an area for a length of time and can "tee up" the local Sysop to put you in his system and that won't work if you are just mobiling through a town with a local BBS.*

*A lot of Packet Users are trying their best to promote the mode of Packet Radio...a password system would just kill it!*

*If you put too many restrictions on something, people will rebel against it...rebel BBSs will start up with the aid of rebel Users and the network will fall in a big heap as the fracas between "us and them " starts.*

*This hobby needs that like a hole in the head!*

**The above appeared on a BBS recently under the callsign VK4JRC - but, how can anyone be sure that's who originated it...?**

### BBS PASSWORDS - WHY THE NEED

*As we all know for many years now, the amateur packet radio community has enjoyed the privilege of and service offered by the packet radio BBS systems. The speed of this service and features offered are available mainly because these systems are allowed to run totally UNATTENDED.*

*If this was not the case the number of BBS systems on air would be very greatly decreased, and services offered would be a bare minimum simply because no Sysop would be able to sit at his keyboard and monitor every single message and bulletin 24 hours a day and forward same manually.*

*Recently a Sysop of a VK6 BBS was fined $40,000 because his system forwarded a libelous bulletin. In the UK recently a pirate using the callsign of G8ASO sent at least 2 bulletins world wide containing MANY swearing type four-letter words.*

*This type of action by a FEW is why we all need password protection.*

*The BBS Sysop to protect his system and his pocket.*

*And the BBS user to protect your integrity and identity. How would you feel if you were the legal holder of callsign G8ASO !!*

*And possibly the most important reason, to RETAIN UNATTENDED operation.*

*It is in fact a PRIVILEGE and can be easily withdrawn.*

**Apparently from VK4CXX but again, how can you be sure?**

# USER AUTHENTICATION FOR AMATEUR RADIO PACKET BULLETIN BOARD SYSTEMS

(continued from previous page...)

Under these conditions it may well be that PBBS are not individual operations, but are run and maintained by local amateur radio clubs.

It may well be appropriate for PBBS to have special callsigns that indicate that they have been certified by the authorities as running a legally acceptable user authentication system.

### ENCRYPTION?

Any authentication system must use encryption and/or decryption. Because the USA government puts restrictions on the export of software containing the Data Encryption Standard (DES) algorithm, it will generally be necessary that a non-DES based system be available for use outside the USA.

This means that the PBBS software, and the users software, should be capable of using alternate encryption algorithms.

In fact the ideal system would be capable of being used with a number of alternate authentication and/or encryption systems.

| | |
|---|---|
| 4 ele 10-11 | $198 |
| 5 ele 10-11 | 239 |
| 2 ele Delta Loop | $182 |
| New 10-11m Co-Linear Vert 6DBD | $175 |
| Duo Band 10-15 3 ele ea | $259 |
| 3 ele 15m | $185 |
| 3 ele 20m | $292 |
| 5 ele 2m Beam | $75 |
| 12 ele 2m Beam | $115 |
| 80m Dx Vert Top Loaded from | $260 |
| M.B. Vert No traps 10-80m | $249 |
| Tri Band Beam No Traps HB35C | $665 |
| 40m Linear Loaded Beam 2 ele | $469 |
| 6 ele 6m Beam | $192 |
| 6m Co-linear Vert-Rad A4 | $150 |
| Dual 2m & 70cm Co-linear-Rad 4 | $95 |
| 2m 2 - 5/8 Co Linear RAD 4 | $92 |
| 23cm 36 ele slot feed s/solder Brass cons from | $147 |
| Corner Ref 70cm & 23 cm from 13 DB | $95 |
| 70cm Beams 12 and 17 ele Bal - Feed from | $102 |

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L G055A.

It is felt that the Australian authorities will be very close behind the USA authorities in requiring PBBS operators to authenticate PBBS users.

Currently there is no known PBBS system which implements a user authentication system that would satisfy the legal requirements.

Nor is there the matching user software.

It is important then that work commence as soon as possible on the development of PBBS authentication systems that will be acceptable by the authorities, and that the accompanying rules and regulations should be discussed as soon as possible.

### PLEASE, NO FLAMES

Any flames directed at me will not be answered but will be assigned to the WPB. Constructive comments welcomed. This document is to promote discussion of the issues.

Please discuss it with your local or state packet radio group, and encourage them to discuss it at a state and federal level. It is important that we have a say in how the legislation is framed that is going to affect us in the very near future.

*References:*

*(1) "Kerberos: An Authentication Service for Open Network Systems" Jennifer Steiner, Clifford Newman, Jeffrey I. Schiller. MIT 1988*

*(2) "Computer Communications Security" Warwick Ford. Prentice Hall Inc. 1994.*

*(3) "The Athena Experiment - Project Athena at MIT: An Experiment in Networked Workstations". Doug Rickard. Digital Equipment Corp. 1990*

*(4) "ARRL Letter" ARRL 26-Apr-1994*

The FCC has finally released the text of the Part 97 changes relative to message forwarding.

The new rules are:

**97.3 Definitions.**

*(7) Auxiliary stations.*

An amateur station, other than in a message forwarding system, that is transmitting communications point-to-point within a system of cooperating amateur stations.

*(28) Message forwarding system.*

A group of amateur stations participating in a voluntary, cooperative, interactive arrangement where communications are sent from the control operator of an originating station to the control operator of one or more destination stations by one or more forwarding stations.

*(36) Repeater.*

An amateur station that simultaneously retransmits the transmission of another amateur station on a different channel or channels.

**97.109 Station control.**

(e) No station may be automatically controlled while transmitting third party communications, except a station participating as a forwarding station in a message forwarding system.

**97.205 Repeater station.**

(g) The control operator of a repeater that retransmits inadvertently communications that violate the rules in this Part is not accountable for the violative communications.

**97.219 Message forwarding system.** [Section 97.216 is redesignated Section 97.217]

(a) Any amateur station may participate in a message forwarding system, subject to the privileges of the class of operator license held.

(b) For stations participating in a message forwarding system, the control operator of the station originating a message is primarily accountable for any violation of the rules in this Part contained in the message.

(c) Except as noted in paragraph (d) of this section, for stations participating in a message forwarding system, the control operators of forwarding stations that retransmit inadvertently communications that violate the rules in this Part are not accountable for the violative communications.

They are, however, responsible for discontinuing such communications once they become aware of their presence.

(d) For stations participating in a message forwarding system, the control operator of the first forwarding station must:

(1) Authenticate the identity of the station from which it accepts communications on behalf of the system: or

(2) Accept accountability for any violation of the rules in this Part contained in messages it retransmits to the system.

*These rules took effect from June 1, 1994.*

# To TCP/IP or not to TCP/IP

### By Paul Butler, VK3DBP

This column, **Here and There in Amateur Radio**, appeared for the first time in the pages of Amateur Radio Action last month. In introducing it, we said that the column would peer into just about every aspect of amateur radio, heading here and there to find out what is happening... well, *OUT THERE*.

True to our word, on we go this month with Part 2 of our look into packet radio — **To TCP/IP or not to TCP/IP?**. Then we'll take up the challenge presented in articles in the last ARA or two on the importance (or lack of importance) of SWR when it comes to making an antenna work properly.

The observations and comments presented here are based on VK3DBP's personal potterings in one field of endeavor or another. What we're waiting for now, of course, is some response from our many readers about *their* forays into the unknown. How about it, eh...?

## More about packet radio — AX.25 vs TCP/IP

Last month, Here and There began a comparison of the two most commonly used packet radio systems, AX.25 and TCP/IP. The discussion was sparked off when VK3DBP and VK3ALS realised that they were reaching the same places in their packet radio travels but by quite different methods. This raised the questions 'What are the differences?' and, of course, 'Is one system better than the other?' To answer these questions, we need to know more about each packet system.

When we write about the family of computer conventions (or *protocols*, as they are known) which includes the Transport Control Protocol and the Internet Protocol, we *should* write **tcp** and **ip** (ie lower case). This reflects the origins of these and other abbreviations in the world of **Unix**, one of the industry-standard computer operating systems.

Unix is so unforgiving, or so powerful, depending on your point of view, that it insists that T and t are *always* different, unlike some other operating systems which simply don't care. In one way, this minor quirk sums up many of the differences between AX.25 and TCP/IP.

The AX.25 standard was developed from X.25, which is used to carry packets of information along the data highways of the world. Packet radio users generally meet AX.25 through a very clean and tidy communications program such as **Telix** or **paKet**. This effortlessly does all the work of driving an intelligent terminal node controller or TNC through the computer's serial port.

Commonly, communications programs provide lots of nifty facilities for recording to a file on disk, scrolling back through a conversation, printing and so on. In other words, there is no need for the user to know a great deal about computers to get along with AX.25. Once the computer is 'talking' to the TNC, a simple command like Connect (or C) followed by a valid callsign will establish a connection with another station, provided it is in radio range and fired up. From there on, the process is very like connecting to a dial-up bulletin board, with simple one-letter commands used to navigate around, including B for BYE when it's time to leave.

A slight variation on this approach to packet radio is to rely on the intelligence (?) of the computer to do the hard work, and so keep the interface as basic as possible. The software is generally very approachable and sports lots of easy-to-use features. This provides a very cheap and easy way into packet radio, since a typical interface costs a few dollars and the software is available in the public domain for nothing!

In many areas, there are packet bulletin boards systems (PBBSs) which collect mail and messages from elsewhere and make them available to the user who logs in through an AX.25 packet connection. This is the way both VK3DBP and VK3ALS (and many others) have been working on packet for some time.

A typical session includes logging on; LISTing the new messages and reading any of interest; receiving and replying to messages from other amateurs; and poking around in the directory of public-access files for downloading. This last process requires a process called YAPP, supported by a program of that name, which sets up the file transfer and resumes the download if it is interrupted for any reason.

A feature which has recently appeared on some PBBSs is access to what is known as the **Wormhole**. This routes packets from an PBBS user and directs it through non-amateur radio data highways to somewhere else, most often via the US, and reconnects into the amateur packet network at the other end. The important point is that users at both ends are amateur operators; the link is invisible or 'transparent' to the user, as the jargon puts it.

The AX.25 user logging into a local PBBS which provides Wormhole access can use the command N (for nodes) to get a list of possible destinations, and T (for Telnet) to connect to one of them. These nodes may be out of radio range, even in another country, but the links in the background provide a reliable route. This is the feature which has opened up packet radio for many users beyond the local (and eventually somewhat limited) chat. It is also the way our hallowed editor Len, VK3ALS, found his way into all sorts of packet goodies.

In parallel with this development, and in many ways causing it to happen, a bunch of alternatives have appeared. These are networking protocols such as

....☞

# To TCP/IP or not to TCP/IP

*(Continued from previous page...)*

NETROM, Rose and TCP/IP. To explain them all would take more space than we have here and would stretch my brain well beyond its limit! Instead, let's concentrate on one — namely TCP/IP — and see how it works.

Packet radio depends for its operation on several interconnected *layers* of communication. Different systems lay more or less of these layers open to the user. Hiding layers makes the system easier to use but less flexible and less powerful; letting the user into more layers opens up more power but often (unfortunately) at the expense of ease of use.

The **Transport Control Protocol** or TCP is responsible for bundling up data into packets ready for transmission. The Internet Protocol or IP then sends the packets on their way. At the other end, IP unwraps them and presents them to TCP again, which translates them to recover the original data. Along the way, there is extensive error checking. If a packet gets lost or corrupted, the protocols will sort out the mess and get everything back together again.

The Wormhole depends entirely on TCP and IP to get messages from one place to another, and it is invisible to the AX.25 user using TelNet through a local PBBS. An alternative approach, however, is to bring the TCP and IP machinery (or *stack*, as it is known) into the local computer. For amateurs, this usually means setting up the **NOS** software, written by Phil Karn, KA9Q, with contributions from countless others around the world. This is the way VK3DBP (for one reason or another) has been playing with packet.

And it is *not* easy, certainly not as easy as AX.25 using a TNC and a communications package. The software is heavily based on Unix and has idiosyncrasies which take some getting used to. It must be set up in the right set of directories and the start-up commands must be exactly right. These commands can be entered at the keyboard or included in a start-up file; either way, the instructions must be followed *very carefully*! I got going with a lot of help from Bryan, VK3BLW, and now have a reliable and workable system. How does it differ from the standard AX.25 setup? Well, once it is running, the software first 'kicks' VK3BLW's newsgroup server, which collects, through several routes, a whole swag of bulletins from around the world. My computer compares notes with Bryan's and the newsgroup server sends anything new in my selected newsgroups (usually AMSAT, for the satellite news).

But while this is going on, fully automatically, I can push that job into the background by starting another job in the foreground. I can, for instance, *connect* via a normal AX.25 link, to another bulletin board or AX.25 user. If I choose the right PBBS, I can even TelNet from there through the Wormhole.

Alternatively, I can TelNet directly to another TCP/IP user, as long as my computer knows the IP address. If the address is unknown, the software will interrogate a *Domain Server*.

This looks through its files and, if it finds the address, handles my TelNet request and establishes the link. I can request a file transfer using FTP (File Transfer Protocol) directly from my TCP/IP stack, via a local PBBS which provides access to the worldwide network of computers through the Wormhole.

What do I get from TCP/IP? I get automation — the software handles the downloading of newsgroups right into my computer, without any intervention from me. Every two hours (or more often if I wish), it asks for anything new. That's why I got bulletins almost up-to-minute when the last Shuttle was first delayed, then eventually launched. I get the option of multiple sessions — I can be downloading newsgroups, collecting a file via FTP and TelNeting to somewhere else in the world, all at the same time. The only limiting factor is my brain, which has a tendency to forget exactly what is going on!

So why are there two ways into the packet network? Well, there are more than two, in fact, and their parallel development reflects the very nature of amateur radio — the experimentation and trial and error which sets our hobby apart from many others. The enthusiasm of one small group spreads across the amateur radio community even though another group is getting to the same place by a quite different route.

The result — an amateur radio community enriched by diversity and moving steadily forward. Sounds great, doesn't it? And we (and ARA) are part of it... keep up the good work!

On a related issue — the existence of computer networks around the world, and the development of links between them (eg the Internet), has left legislation *way* behind. There is a lot of work to be done by those people who frame and interpret legislation, to catch up on technological forward leaps — it must be recognised that computer networking is no longer confined to a single country but leaps political boundaries at a single bound. Come on, Canberra — let's catch up or get left behind...

## RESONANCE — THE KEY TO AN EFFECTIVE TRANSMITTING ANTENNA

In ARA, we have recently been treated to a revival of the eternal argument about the meaning of **Standing Wave Ratio** or SWR. This is a characteristic of an antenna system, which includes both the antenna itself and the transmission line running between the antenna and transmitter.

The measurement of standing wave ratio is used to compare the signal sent from the transmitter to the antenna with any radio frequency (RF) energy reflected back from the antenna. An SWR meter is used to measure SWR, usually at the transmitter end of the transmission line, and an antenna tuning unit is often used to adjust the SWR of the system.

One school of thought suggests, often quite strongly, that a low SWR (ie as close to 1:1 as possible) is the sign of an effective transmitting antenna. The implication is that a well-behaved system, which turns all the RF energy generated by the transmitter into electromagnetic radiation and sends it on its way, can be recognised by an SWR of 1:1 at the transmitter end of the transmission line. It doesn't matter how the low SWR is achieved — 1 is best!

Well, *wrong*, I say! This argument totally misses the point about *resonance*, the feature of an effective antenna by which the RF energy on the transmission line really *will* take off and leave as electromagnetic radiation. I argue my point of view through a mixture of practical experimentation and common sense — you can agree or disagree as you wish…

Let's look at some analogies first. Try to think of a real-life situation in which *you* have experienced, first hand, the idea of resonance. It may be that *superb* hit you did in cricket, tennis, baseball or whatever, when, for seemingly little effort, the ball absolutely flew away. Or it may be the PINGing of a particularly well-made wine glass or china cup. Have you ever cracked a stockman's whip and felt the power leave your hand and shoot off the end of the whip?

In each of these cases, the match between one medium and another was *just right*, so the energy you put in came out the other end in just the right way.

A resonant antenna system behaves just like a whip — the transmitter produces RF energy which is sent up the transmission line to the antenna, which then converts the energy to electromagnetic radiation — as long as it is resonant. If it *is* resonant, it goes PING! and the energy shoots out into the ether, just like the crack of a whip. If it is not resonant, it's more of a *phutt…*!

Do you want a PING! or a PHUTT? Obviously the former. (Crumbs. Where's Kolm when you need him?)

But how do you know which you've got? SWR is certainly the key here. A truly resonant antenna (ie one which will PING!) presents the correct impedance to the transmission line, which should match said impedance to the transmitter. A 50 ohm transmitter wants to see a 50 ohm antenna — if it does, all the energy goes out as electromagnetic radiation, the standing waves throughout the antenna system are just right, and the SWR is 1:1.

I suggest, therefore, that to make sure your antenna is resonant (and therefore efficient), you need to **measure the SWR as close to the antenna as possible!** The transmission line can mask what is happening at the transmitter end. Even worse, plugging in an ATU and going for an SWR of 1 can *totally* mask the antenna's true performance.

This is just what I have been playing with over the last week or two. I acquired, many years ago, a multi-band trap vertical antenna which has given good service. But every so often I reply to a 5 and 9 signal and get *nothing* back. Often, I've blamed the other operator — is anything less than telephone quality not good enough, etc?

Then recently I put an antenna designed for mobile use up on the roof and my regular contacts (the slow-scan gang on 14.230 MHz) said, "Your signal's *much* better! What have you done?" The key was resonance — the mobile whip was well-designed and PINGed very nicely! (Unfortunately, it did *not* like the winds off the bay in this neck of the woods and fell to bits. Uncle Len then came to the rescue and handed me a Hustler trap vertical, obtainable from Dick Smith Electronics, and suggested that I have a play around and see how it behaved.)

I did not want to repeat my experience with the other trap vertical, so I lugged the transmitter, power supply and mains cord, SWR meter and everything else up to the flat aluminium roof and set the whole lot up. The run of cable from the antenna to the SWR meter and transmitter was about 1 metre long, so I *really* was measuring the SWR at the antenna! Firing up the Hustler was a bit of a fiddle, since there are quite a few parts and the antenna connection is made via screw terminals, not a nice neat plug and socket. I did get it going, however, and tentatively put in about 1 watt of power. Starting on 10 metres, I worked my way up the bands, looking for evidence of resonance (ie an SWR of 1 at the antenna).

No problem on 10 metres — quite a nice dip in the SWR at about the midpoint of the band. What about 15? Not bad — a little bit of fiddling with lengths through the relevant section of the antenna but not bad. But when I got to 20 metres, there was absolutely *no* way in which the SWR would dip, at any point in the band. Changing spacings between antenna elements made no difference whatsoever.

Back to the instructions…

The Hustler can be ground-mounted or elevated, with or without radials, and there can be problems with too effective a ground-plane. My installation was over a flat metal roof and obviously was not working. So down to ground level we went.

Again, no resonance at 20 metres. Our sandy soil does not hold enough moisture to provide a good ground plane. What's the answer? Radials. The Hustler has a radials option, and this was also kindly supplied by VK3ALS. It was the work of moments to fasten them onto the point provided and spread them around the garden. (The only one put out was the dog, which does not understand radials and believes everything is edible.)

Back to the transmitter, send a watt or so and BINGO!! the reflected power reading was zero.

It was interesting to try radials on the flat metal roof — no good. Clearly, the large bulk of metal dominated, but not in the right way to produce resonance. As the Hustler instructions state, although an elevated location is preferred for better takeoff, a ground mount with radials can easily beat an elevated location without them. And that was certainly proven in this case.

I have now moved the Hustler and its radials to a more convenient location — the middle of the lawn may be the best place in terms of physics but it has problems in a family context. The antenna is now tucked into a flower bed where it can perform well without getting ripped down by the dog, the local council or a member of the family. Next, I plan to add the 80 metre option — the whole thing can grow considerably to include longer wavelength (lower frequency) bands.

More next time on the SWR/resonance saga.

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# Propagation

### East - England (short path)

```
28.5
24.9
21.2         ..
18.1     ...%%... ..  .   ...
14.2 %.A     AAAAA%.......%%%%
10.1                   %%%FF
 7.2                    FFF
 3.6                    FFF
 1.8                    FFF
 0.9                    FFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - England (long path)

```
28.5
24.9
21.2                       ..
18.1 ...   ..             .%%.
14.2 F%%%%.%%...          FFFF
10.1      FF               A
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

## ABOUT THESE CHARTS

The data on these pages are graphs showing forecasts for expected HF operating conditions between Australia and a number of important DX destinations. The information they contain is prepared by **IPS Radio and Space Services**, a division of the federal Department of Administration Services. IPS monitors changing radio conditions - which are affected most greatly by fairly predictable changes in solar activity - and issues reports and warnings based on that data.

Stations in the eastern half of Australia should refer to graphs on the left hand page. The data on the right hand page is calculated for stations in the western half of the continent. Of course, if your location is in the middle of the continent try reading them *both* - then make an educated guess.

The horizontal axis of each graph represents the hour of the day expressed in Universal Co-ordinated Time or UTC ("z"). The vertical axis lists specific point frequencies within reach of each HF amateur band.

The maps are easy to read. First go to the map which looks closest to the area in which you are interested. Look *up* from the time and *across* from the selected band to the point at which the two variables merge. Note which symbol - if any - appears at the intersection of the particular time and frequency combination for that area and refer to the legend (right) to find the sort of propagation most likely to apply. If the space is blank the forecast is not good - your time and frequency combination is unlikely to allow communication to the destination station.

### East - Central and East Coast USA

```
28.5
24.9
21.2 ....                 ....
18.1 %%%%.         ....  %F%%%
14.2 AFFFF%%.......%%A       A
10.1       FFFFFFF
 7.2       FFFFFF
 3.6        FFFFF
 1.8        FFFFF
 0.9        FFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - West Coast USA

```
28.5
24.9 ......                 ..
21.2 %%%%%%..             ..%%
18.1 SSSSS%%%..      .   %SSSS
14.2  ASSSSSS%%.....%%..A
10.1       SSSSSSSSSS
 7.2        SSSSSSSS
 3.6        SSSSSSSS
 1.8        SSSSSSSS
 0.9        SSSSSSSS
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - South America

```
28.5
24.9
21.2 ..                    .%.
18.1 %....  .             .%F%
14.2 F%%%%..%%..          FFFF
10.1      FFFFF%%%        AA
 7.2       FFFFFF
 3.6       FFFFFF
 1.8       FFFFFF
 0.9       FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - West Indies

```
28.5
24.9 ....                  ...
21.2 %%%%...              %%%%
18.1 FF%%%%%..           .FFFF
14.2 FFFF%F%%%.......A    AFFF
10.1      FFFFFFFF
 7.2       FFFFFF
 3.6       FFFFFF
 1.8       FFFFFF
 0.9       FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - Japan

```
28.5
24.9     ....
21.2   ..%%%.. .          ...
18.1 .S%%%%%%....         %%%.
14.2 SSSSSSSS%%%%.........SSSS
10.1         SSMMSSS%%%%%%S
 7.2          SMMSSSSSSSSS
 3.6           MMSSSSSSSS
 1.8           MMSSSSSSSS
 0.9           MMSSSSSSSS
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - Central Europe

```
28.5
24.9
21.2       ....
18.1    ...%%%... ..  .   ..
14.2 ..A     AAAA.........%%%.
10.1                  F%%%FF
 7.2                   FFFF
 3.6                   FFFF
 1.8                   FFFF
 0.9                   FFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - Middle East

```
28.5
24.9    .....
21.2  ..%%%%%%
18.1 ..%%%FFFF..           ...
14.2 %FFAA     A...........%%%
10.1               FFFFFF%FF
 7.2                FFFFFFF
 3.6                FFFFFFF
 1.8                FFFFFFF
 0.9                FFFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - North Africa

```
28.5
24.9       .
21.2      .%%%
18.1 ... .%%%F..       .   ...
14.2 %%%.AA       A....%...%%%
10.1                  FFFFFF
 7.2                   FFFFA
 3.6                   FFFF
 1.8                   FFFF
 0.9                   FFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - West Africa (short path)

```
28.5
24.9
21.2        .
18.1 ....   %%              ..
14.2 %%%..  FF%.A          .%%
10.1       %F          ....FF
 7.2                   FFFFF
 3.6                    FFFF
 1.8                    FFFF
 0.9                    FFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - West Africa (long path)

```
28.5
24.9                      .
21.2        ..            %
18.1        %...  ....   .%.
14.2   A....F%%%A    AAAAAA
10.1       FF
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### East - South Africa

```
28.5
24.9
21.2       %%%
18.1      .SSM%.
14.2      SSSMM%...
10.1 A    AA      M%.%%%%M%%.A
 7.2               ASMMMMMMM
 3.6                SMMMMMMM
 1.8                SMMMMMMM
 0.9                SMMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

# forecaster July 1994

### LEGEND TO SYMBOLS

**.** Propagation is possible, but unlikely at this time and frequency on more than half the days of the month.

**%** This frequency/time pair should allow communications on between 50% and 90% of the days of the month.

**F** Your best bet: first "F" mode conditions should apply on at least 90% of days this month for the given time and frequency.

**E** Propagation via the "E layer" expected on up to 90% of days of month at this time and frequency.

**P** A fair mixture: up to 90% chance of a path using "F mode" and between 50% and 90% probability of an "E layer" path.

**B** A good mixture: up to 90% chance of a path using either "E layer" or mixed "F" modes.

**M** A good mixture of combined "F" modes - both first and second mode up to 90% of the time.

**S** Second "F" mode conditions should apply on at least 90% of days this month for the given time and frequency.

**A** High atmospheric absorption of the signal is likely - better to use a higher band. Too close to the ALF for good HF signals.

### West - England (short path)

```
28.5
24.9
21.2        .....
18.1     ..%%%F%%.
14.2 %%.%AA     AAA..........%
10.1 F                A%%%%%%F
 7.2                    FFFFF
 3.6                    FFFFF
 1.8                    FFFFF
 0.9                    FFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - England (long Path)

```
28.5
24.9
21.2
18.1 ..     ...              .
14.2 %%%...%%FF%AAA         %%
10.1        A
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - Central and East coast USA

```
28.5
24.9                       .
21.2 ....                   ..
18.1 %%%%.                 .%%
14.2     A%.    .....AA  A
10.1         %%%FA
 7.2          FFA
 3.6          FF
 1.8          FF
 0.9          FF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### Perth - West coast USA

```
28.5
24.9  .....
21.2 .%%%%%..               ..
18.1 F%%%%%%%..            .FF
14.2    AFFFF%%%........A
10.1         FFFFFFFF
 7.2          FFFFFF
 3.6          FFFFFF
 1.8          FFFFFF
 0.9          FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - South America

```
28.5
24.9
21.2
18.1  ...
14.2 %%%%...... ..           %
10.1 FF     AF%.F%        ..%F
 7.2 F         FFF          FFF
 3.6           FFF          FF
 1.8           FFF          FF
 0.9           FFF          FF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - West Indies

```
28.5
24.9  ...
21.2 .%%%....                .
18.1 %%%%%%%...              %
14.2 FFFFFFF%%%%..          %F
10.1        FFFFF%
 7.2         FFFF
 3.6          FFF
 1.8          FFF
 0.9          FFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - Japan

```
28.5
24.9     ......
21.2   ...%%%%%.            .
18.1 %SSS%%%%%%..           %%
14.2 SSSSSSSSSS%%........  .SS
10.1         ASSSS%SSS%%%..A
 7.2           SSSSSSSSSS%
 3.6           SSSSSSSSSSS
 1.8           SSSSSSSSSSS
 0.9           SSSSSSSSSSS
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - Central Europe

```
28.5
24.9
21.2       ......
18.1    ...%%FF%%.
14.2 %..%A      AA...........%
10.1 F                F%%%%%%F
 7.2                   FFFFFF
 3.6                   FFFFFF
 1.8                   FFFFFF
 0.9                   FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - Middle East

```
28.5       .....
24.9   ..........
21.2  ..%%%%MMM%..
18.1 ..%MMMMMMMM%..  ..      .
14.2 %MMMMMSSSSMM%%..%.......%
10.1 MS           AMMMMMMMMMMM
 7.2 A              MMMMMMMMMA
 3.6                MMMMMMMMM
 1.8                MMMMMMMMM
 0.9                MMMMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - North Africa

```
28.5
24.9       .. ..
21.2      .%%%%%.
18.1 .....%%%FFF%.           .
14.2 %%%%%AA      A..........%
10.1 FA               F%%%%%%F
 7.2 F                 FFFFFFF
 3.6                   FFFFFF
 1.8                   FFFFFF
 0.9                   FFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - Wes Africa (short path)

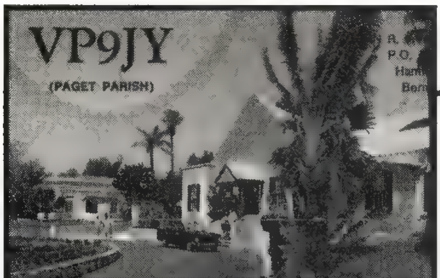
```
28.5
24.9         ...
21.2        %%F%.
18.1  ..    FFFF.
14.2 .%%.. .FFFAA AA     ... .
10.1 FF               A%%%%%%F
 7.2 F                 FFFFFFF
 3.6 F                 FFFFFFF
 1.8 F                 FFFFFFF
 0.9 F                 FFFFFFF
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - West Africa (long path)

```
28.5
24.9
21.2         ..
18.1        .%%.           ..
14.2   A....%FF%A
10.1         A
 7.2
 3.6
 1.8
 0.9
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```

### West - South Africa (short path)

```
28.5
24.9       ....
21.2      .%%%%%
18.1      %MMMMF.
14.2     .MMMMMM%.
10.1 ... SSSSSAASS%%%%%%%%....
 7.2 MA            MMMMMMMMMMM
 3.6 M              MMMMMMMMMM
 1.8 M              MMMMMMMMMM
 0.9 M              MMMMMMMMMM
 MHZ !     !     !     !     !
 UT 00    06    12    18    24
```



# DX UPDATE
## WHAT'S HAPPENING OUT THERE?

**The following information was obtained from a number of sources including the Shortwave Possums BBS with "on board" credit to OPDX/BARF80 (Ohio/Penn DX Bulletin) with thanks to the ARRL, Northern Ohio Amateur Radio Society, Northern Ohio DX Association, Ohio/Penn PacketCluster Network, K4CEF & Southeastern Cluster Group, DJ5JH, DJOWQ, GOGWA, Z32GX, KN4F, AH6MM, KQ8M, KB8NW, KL7Q and WB9OTX. It has been edited to omit specific USA only interest. ARA wants to supply the best DX information available (as we believe we already do thanks to Jim Smith, VK9NS). We would welcome regular input from VK and ZL stations, particularly from net controllers on a basis of heard/worked. Please FAX Len Shaw (VK3ALS) on (03) 775 2575 (business hours) to have your info included in this section.**

### 5A LIBYA

There are reports of a planned operation in Libya by a group of Japanese amateurs led by Ajiro, JA2JPA. No offical date has been set, but equipment has been shipped to Libya and the QSL cards are already printed. The planned operation has a United Nations agency sponsorship. There was an oral permission to operate but the operation will not take place until the written authorization is received. Meanwhile, a pirate has been operating as 5A/JA1MAO.

Don't waste your time, JA1MAO is home in Japan.

### EU EGYPT

In Cairo, Pavel, OK2FUN, (member of the Czech Embassy) was able to obtain an official Egyptian licence (which is rare for foreign visitors) with the callsign SU1KR just for the recent CQ WW WPX CW. QSL via OK2EC. Pavel's length of stay is unknown at this time, but it was reported he will be using SU1/OK2FUN (also SU1STAR). He will be active on all bands, excluding 160 meters. His 160 meter's antenna is not operational as of yet.

### JY JORDON

There was activity during June from JY-land. QSL to the home callbook address for the following JY8ED/G3SED, JY8JH/G0JHC, JY8IC/GJ4ICD, JY8OX/G3KOX, JY8VA/DL7AV and JY8ZC/G4CCZ.

### PACIFIC DXPEDITIONS

Yarl, SM6FJY, will be active from June 27th to July 10th from Guam (KH2). From July 11-24th, Yarl plans to be in Belau (KC6). After the Belau operation, Yarl will return to Angola and will stay there until August 18th.

### UPCOMING ISLAND ACTIVITY

Dr. Rick Dorsch will be active this summer from various islands.

All activity will be on the following: CW - 5 or 25 kHz up from band edge. SSB - 14260, 21260 and 28460 kHz. QSL via K8LJG. He will be operating from the following islands:

*June 18-25:* NA-110 (Hilton Head Island, SC) signing NE8Z/1C0 and/or NE8Z/4.
*June 23/24:* NA-058 (Georgia State Island group) signing NE8Z/1G0 and/or NE8Z/4.
*Jun/Jul/Aug:* Various Canadian islands in Ontario for the Canadian Islands Award (Dates unknown). Signing NE8Z/XK3/M and NE8Z/VE3/M. Using a 1kw + TA33 on the car!
*Mid-July:* NA-139 (Maryland State East Island Group) signing NE8Z/1M3 and/or NE8Z/3.

### 4U1ITU ITU HEADQUARTERS (GENEVA)

Len KB2R, will be active during the IARU HF Championship Contest (July 9-10) and two days before. This will be a single operator effort and the 4U1ITU station counts as a HQ multiplier for the contest. Activity will be on 80-10 meters and possibly 160 meters. The two days before the contest, Len will be active as time permits on 80-10 meters CW/SSB and on the WARC bands if antennas are available. QSL the entire expedition (contest and pre-contest) via WA2CJT, bureau or direct (94CB).

### 9U BURUNDI AND FRENCH QSL TIP

Since the current activity by Jean-Pierre, 9U/F5FHI, in Burundi, readers have been looking for F5FHI callbook address.

QSL to: Jean-Pierre Maidon, La Hee, F - Vertou, 44120, France. Ted, F8RU, has passed on the following QSL tip for the readers. The F5 + 3 letter suffix calls are a result of a new French callsign reassignment policy. Until an updated version of the CallBook is published, look for these suffixes under the following prefixes in the 1994 and earlier CallBooks: F1, FC1, FD1 or FE1.

Jean-Pierre, F5FHI, and Paul, F6EXV, are both employees of UNHCR (United Nations High Commissioner for Refugees) and are presently on a mission in Burundi (after they had to leave Rwanda). Jean-Pierre continues to be active on 21295 kHz between 1430 to 1630z.

### CY9 ST. PAUL ISLAND

Randy, N0TG, reports that their upcoming CY9 DXpedition has been moved from July 1st to September 19th (ending the 25th). This early fall propagation should offer better conditions than a summer date. The boat charter has been reserved, the Coast Guard landing permission has been received and the travel arrangements have been made. Operators will be Randy/N0TG, Bob/KW2P, Murray/WA4DAN and Ron/AA4VK.

### JA BAND AND POSTAL CHANGES

Masa, JH3VNC/WG2P (Editor of Five-Nine 80/75 meter DX band column) reports that on May 20th, Japanese Postal and Telecommunication services announced the release of another 75 meters band window which is from 3747 to 3754 KHz. Total windows on 75 meters are now 3500 to 3575, 3791 to 3805, and 3747 to 3754 KHz.

A fax received from Nao, JH1HGY, reports that air mail charges were increased in January. Just sending a green stamp to Japan now will not cover return postage (for a 10 gram letter) from most place other than Asia and Guam. For North and Central America, Europe, CIS, Middle East and CIS it costs 110 yen to send a 10g letter (190 yen for a 20g), while it costs 130 yen (230 yen for a 20g) for South America and Africa. A green stamp is worth only 100 yen, but an IRC is worth 130 yen (which is sufficient).

### JW SVALBARD

Tom, LA4LN, and Magne, LB3RC, will sign JW4LN and LB3RC/JW respectively from the western coast of Vest-Spitsbergen from August 1-20. This is a scientific expedition and NOT a DXpedition, but they will be operating all bands 160-10 meters with special attention to the WARC bands. Activity will be on CW, SSB and the digital modes in the mornings, evenings and when the weather is bad, and also when they do not have to chase away the dangerous polar bears!

QSL direct only with SAE and return postage to the respective home calls. NOTE that the LA4LN Callbook address is wrong!

Here are the correct addresses:

JW4LN via LA4LN, Tom Victor Segalstad, P.O. Box 15 Kjelss, N-0411 Oslo, Norway. LB3RC/JW via LB3RC, Magne Nicolaysen, \stgaards gate 23 B, N-0474 Oslo, Norway.

### TL CENTRAL AFRICAN REPUBLIC

Gene, TL8NG, has been active on CW the past month on the WARC bands. Check 12, 17 and 30 meters between 1330 to 1600z and again after 0430z. There was also a report that he shows up on the 21335 DX net sometimes (check around 1400z). QSL via WA1ECA.

### TT CHAD

Another new station has shown up from here signing F5LGF/TT8. No other information is available at this time other than the operator's name is Chris. This station has only been heard on 20 meters CW between 2000 and 2200z.

### C5 THE GAMBIA

For Uli, DK2OC, and Brendan, G0UCT, signing C56/ their homecall - QSL C56/DK2OC to DK2OC and C56/G0UCT to G1GMZ.

### D2 ANGOLA

Peter, ON6TT, will be in D2-land June 16th through July 16th. His callsign is undetermined yet, but he plans lowbands and WARC activity. Due to the circumstance Peter will be using commercial equipment, therefore he will not have the capability to work split. QSL via ON5NT. After Angola, Peter will be active from 7Q-land July 16th to August 1st.

### D4 REPUBLIC OF CAPE VERDE

Angelo, D44BC, has been heard on 17 meters and RS-12 this month. Check 18128 kHz around 1130z or on RS-12 check between 29430 and 29445 from 1200 to 1430z.

### FT5 KERGUELEN ISLAND

Pierre, FT5XJ, was heard mid-June on a DX net on 14226 kHz around 0530z. He will be leaving in July and will return three months later. QSL via F5NLL (F1NLL in the CB).

### KG4 GUANTANAMO BAY (CANCELLED)

The planned operation by Bill, KQ4GC, in Guantanamo Bay for June 10-17 was cancelled.

# CURRENT LIST OF RUSSIAN OBLASTS

**The sorting out of amateur radio in Russia continues and the following is the list of new oblast designators. One emerging new group is the National Amateur Radio Organisation which is a different body to the ex-Voluntary Society of Assistance to Army, Airforce and Navy.This group has nothing to do with prior awards or contests. There is now a new Award "RUSSIA", new contests, etc.**

**Europian part of Russia**

**Prefixes**

**RA, UA, RV, RW, RZ, RN, RU, RX**

| BLOCKS | THE NAME OF OBLAST(REPUBLIC) | ABBREV |
|---|---|---|
| 1A, 1B | St.Petersburg | SP |
| 1C, 1D | Leningradskaja obl. | LO |
| 1N | Karelija Rep. | KL |
| 1O | Archangelskaja obl. | AR |
| 1P | Nenetskij AO | NO |
| 1Q | Vologodskaja obl. | VO |
| 1T | Novgorodskaja obl. | NV |
| 1W | Pskovskaja obl. | PS |
| 1Z | Murmanskaja obl. | MU |
| 2F | Kaliningradskaja obl. | KA |
| 3A, 3B | Moscow | MA |
| 3D, 3F | Moscowskaja obl. | MO |
| 3E | Orlovskaja obl. | OR |
| 3G | Lipetskaja obl. | LP |
| 3I | Tverskaja obl. | TV |
| 3L | Smolenskaja obl. | SM |
| 3M | Yaroslavskaja obl. | JA |
| 3N | Kostpomskaja obl. | KS |
| 3P | Tulskaja obl. | TL |
| 3Q | Voronevzskaja obl. | VR |
| 3R | Tambovskaja obl. | TB |
| 3S | Rjazanskaja obl. | RA |
| 3T | Nivzegorodskaja obl. | NN |
| 3U | Ivanovskaja obl. | IV |
| 3V | Vladimirskaja obl. | VL |
| 3W | Kurskaja obl. | KU |
| 3X | Kaluvzskaja obl | KG |
| 3Y | Brjanskaja obl. | BR |
| 3Z | Belgorodskaja obl. | BO |
| 4A | Volgogradskaja obl. | VG |
| 4C | Saratovskaja obl. | SA |
| 4F | Penzenskaja obl. | PE |
| 4H | Samarskaja obl. | SR |
| 4L | Uljanovskaja obl. | UL |
| 4N | Kirovskaja obl. | KI |
| 4P | Tatarstan Rep. | TA |
| 4S | Mariy-El Rep. | MR |
| 4U | Mordovskaja Rep. | MD |
| 4W | Udmurtija Rep. | UD |
| 4Y | Chuvashija Rep. | CU |
| 6A, 6B | Krasnodar | KR |
| 6E | Karacharovo -Cherkessija Rep. | KC |
| 6H, 6F | Stavropol | ST |
| 6I | Kalmyk Rep. | KM |
| 6J | Severnaja Osetija Rep. | SO |
| 6L, 6M | Rostovskaja obl. | RO |
| 6P | Chechen Rep. (=1C1AK etc. -aam) | CN |
| 6U | Astrachanskaja obl. | AO |
| 6W | Dagestan Rep. | DA |
| 6X | Kabardino-Balkarija Rep. | KB |
| 6Y | Adygeja Rep | AD |

**ASSIAN PART OF RUSSIA**

**Prefixes**

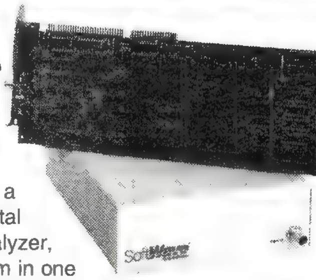
**RA, UA, RV, RW, RZ, RN, RU, RX**

| BLOCKS | THE NAME OF OBLAST(REPUBLIC) | ABBREV |
|---|---|---|
| 8T | Ust-Ordynskiy AO | UO |
| 8V | Aginsky Burjatsky AO | AB |
| 9A, 9B | Cheljabinskaja obl. | CB |
| 9C, 9D | Sverdlovskaja obl. | SV |
| 9F | Permskaja obl. | PM |
| 9G | Komi-Permjatskiy AO | KP |
| 9H | Tomskaja obl. | TO |
| 9J | Chanty-Mansijsky AO | HM |
| 9K | Yamalo-Nenetskiy AO | JN |
| 9L, 9E | Tumenskaja obl. | TN |
| 9M | Omskaja obl. | OM |
| 9O | Novosibirskaja obl. | NS |
| 9Q, 9R | Kurganskaj obl. | OB |
| 9U | Kemerovskaja obl. | KE |
| 9W | Bashkorstan Rep. | BA |
| 9X | Komi Rep. | KO |
| 9Y | Altaj | AL |
| 9Z | Gorno-Altajskiy AO | GA |
| 0A | Krasnojarskiy Kr. | KK |
| 0B | Taymyrskiy AO | TM |
| 0C | Chabarovskiy Kr. | HK |
| 0D | Evrejskaj AO | EA |
| 0F | Sachalinskaja obl. | SL |
| 0H | Ewenkijskij AO | EW |
| 0I | Magadanskaja obl. | MG |
| 0J | Amurskaja obl. | AM |
| 0K | Chukotka | CK |
| 0L | Primorskiy Kr. | PK |
| 0O | Burjatija Rep. | BU |
| 0Q | Sacha Rep. | YA |
| 0S | Irkutskaja obl. | IR |
| 0U | Chitinskaja obl. | CT |
| 0W | Chakassija Rep. | HA |

## THE 21st CENTURY COMM. RECEIVER IS HERE TODAY

THE FABULOUS

**SoftWave**



**SoftWave** is the first fully integrated digital communications receiver for Microsoft Windows. **SoftWave** combines a high performance receiver, digital signal processor, spectrum analyzer, database and Windows program in one product. It opens the door to wireless communications on the PC.

**GENERAL FEATURES:**

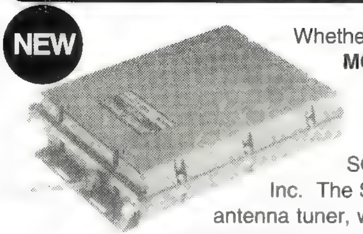
Includes HF receiver, VHF Scanner, AM DX Radio, World Map Radio, Digital Signal Processor, Spectrum Analyzer, Oscilloscope, Signal Constellation, Multi-Mode Demodulator, Decoder, Database and Windows program in one product.

All power and signal for the external receiver unit come from the PC by way of the RS-232 cable (included).

Will operate in the background while you use other Windows applications. Simple installation, does not require changes to jumpers or bus address.

Accurate display of signal strength in dBm. Seven digital demodulators including: AM, Synchronous AM, FM-XP (Cross Prod.), FM-PLL, CW, CW-NB (Narrow Band), CW-TT (Tone Tag). 48 digital IF filter bandwidths from 11kHz to 49Hz. Continuous coverage in HF, 0.5 to 30 MHz and VHF, 108 to174 MHz. One hertz tuning resolution. Tunable notch filter with 60 dB attenuation. Real time spectrum analyser. Real time oscilloscope or a signal constellation and many other features- **TOO MUCH TO TELL YOU - GET YOUR BROCHURE!**

## The SG-230 Smartuner™ HERE AT LAST



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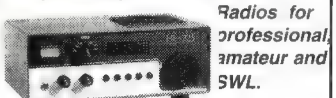

**LOWE:** *HF-225*....$1450, *HF-150*....$995
**AOR:** *AR3030*....$1599, *AR3000A*....$1950
**JRC:** *NRD535G*....$ call, *NRD535D*....$call
**KENWOOD:** *R5000*....$ call,
**ICOM:** *R1*....$ call, *R100*....$ call
*R72*...$ call, *R7100*....$ call, *R9000*....$ call

***CALL FOR FURTHER INFO & BROCHURE***

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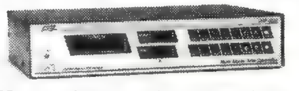

*DSP-1232*....$1495, *DSP-2232* ...... $1895
*PK-900*.........$1250, *PK-232MBX*.... $695
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|---|---|---|
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| **TE-23** | 2-element beam | $414 |
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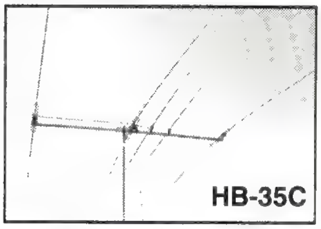
| **TE-43** | 4-element beam | $750 |
| **HB-35C** | 5-element trapless beam | $770 |



**HB-35C**

### FOUR BAND BEAMS FOR 7-14-21-28 MHz BANDS

**TE-44**

| | | |
|---|---|---|
| **TE-14** | rotatable dipole | $275 |
| **TE-34** | 3-ele beam on 14-21-28MHz, 1-ele on 7MHz | $695 |
| **TE-44** | 4-ele beam on 14-21-28MHz, 1-ele on 7MHz | $870 |

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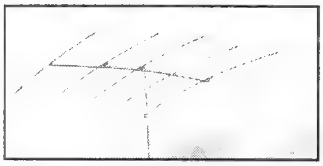
### SIX BAND BEAMS FOR 10-14-18-21-25-28 MHz BANDS

| | | |
|---|---|---|
| **TE-26** | dual rotatable dipole | $380 |
| **TE-46** | 3-ele beam on 14-21-28MHz, 1-ele on 10-18-25MHz | $750 |
| **TE-56** | 3-ele beam on 14-21-28MHz, 2-ele on 10-18-25MHz | $950 |



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### SEVEN BAND BEAMS FOR 7-10-14-18-21-25-28 MHz BANDS

**TE-57**

| | | |
|---|---|---|
| **TE-27** | dual rotatable dipole | $440 |
| **TE-47** | 3-ele on 14-21-28MHz, 1-ele on 7-10-18-25MHz | $850 |
| **TE-57** | 3-ele on 14-21-28MHz, 2-ele on 10-18-25MHz, 1-ele on 7MHz | $1025 |

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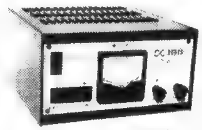

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# AWARDS...

### REDCLIFFE & DISTRICTS RADIO CLUB RALLY AUSTRALIA AWARD

1. The object of this award is to travel around Australia by radio, making progressive contacts as you go.

Valid contacts are those made on or after the 1st October 1986.

2. The award is available in two grades;

(a) The BASIC Award is a two colour certificate printed on parchment style card.

(b) The ENHANCED Award is an etched aluminium plaque in gold on a black background. It will be engraved with the recipients details.

3. The two grades are totally separate awards. It is not necessary to complete the Basic Award before attempting the Enhanced Award. Contacts made for one award do not count toward the other

4. BAND and MODE endorsements are available. Packet contacts are valid.

5. Short Wave listeners are eligible to participate in these awards. These rules, with the inclusion of the callsigns of both stations logged apply.

6. BASIC RALLY AUSTRALIA AWARD.

(a) This award requires contacts with 25 Cities and Towns around Australia.

(b) The FIRST and also the FINAL contact must be with a R&D Radio Club Member These contacts are deemed to the Redcliffe checkpoint regardless of the members QTH.

(c) THE FOLLOWING CITIES ARE MANDATORY CHECKPOINTS:

Redcliffe Brisbane Sydney Canberra Melbourne Hobart Adelaide Perth Darwin Mount Isa Townsville Redcliffe

(d) A further 2 contacts in each of VK2, VK3, VK4, VK5, and VK6 with a further 1 contact in each of VK1, VK7 and VK8 made in progressive order with the mandatory contacts.

(e) The rally may be run in either direction. ie Redcliffe-Sydney etc or Redcliffe-Townsville etc.

7. ENHANCED RALLY AUSTRALIA AWARD.

(a) This award requires the accumulation of 1000 points from progressive contacts throughout Australia.

(b) Contact with all the mandatory checkpoints (as per the Basic Award) are required.

(c) Points awarded for contacts within VK1 20pts VK2 10pts VK3 10pts VK4 10pts VK5 10pts VK6 10pts VK7 20pts VK8 20pts.

8. APPLICATIONS.

(a) The Applications for these awards should be accompanied by a certified log extract, signed by 2 other amateurs showing date, time, frequency, callsign and location of the stations worked.

(b) The cost of the BASIC Award is $A 5.00 or 5 IRCs

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To

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Secretary

S8AAT
President

(c) The cost of the ENHANCED Award is $A 30.00 or 30 IRCs

(d) Applications for these awards should be sent to

***The Awards Manager***
***Redcliffe Radio Club***
***PO. Box 20***
***WOODY POINT QLD.***
***AUSTRALIA. 4019***

9. CONTACT INFORMATION.

(a) Contact with a Redcliffe Club Member is only required for the start and finish contact. Any licensed Amateur may be worked for all other contacts.

(b) The Redcliffe Radio Club conducts a net every Sunday on 3.612 MHz under the callsign of VK4RC. Club Station VK4IZ can also be heard in most VK contests. A list of members callsigns can be had by sending a SASE to the Awards Manager or sending a packet message to VK4LW @ VK4WIA-1.BNE.QLD.AUS.OC.

### REDCLIFFE CITY AWARD

1. The Redcliffe City Award requires an Amateur Station in VK or ZL to contact a Redcliffe and Districts Club Station and Four Club Members to qualify.

2. Any Amateur Station other than In VK or ZL requires contact with the Redcliffe and Districts Club Station and Two Club Members to qualify.

3. BAND and MODE endorsements are available. Packet contacts are valid.

4. Short Wave listeners are eligible to participate in these awards. These rules, with the inclusion of the callsigns of both stations logged, apply.

5. APPLICATIONS.

(a) Applications for these awards should be accompanied by log extract showing date, time, frequency, callsign and location of the stations worked.

(b) The cost of the Award is $A 5.00 or 5 IRCs

(d) Applications for the award should be sent to the Awards Manager as above.

9. CONTACT INFORMATION.

(a) The Redcliffe and Districts Radio Club conducts a net every Sunday on 3.612 MHz under the callsign of VK4RC. Club Station VK4IZ can also be heard in most VK contests. A list of members callsigns can be had by sending a SASE to the Awards Manager.

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## PACKET RACKET...by John Day, VK3ZJF@VK3BLW

# *MORE ON G-TOR
# *NEW KENWOODS & KANTRONICS
# *PACKET LEGALITIES
# *PACKET NETWORK - Part 2

### More G-TOR news

Last month I mentioned **G-TOR** and the availability of upgrades for the KAM-Enhanced and KAM+ multi-mode controllers, and several readers have written to ask when other manufacturers would support G-TOR.

When we contacted **Phil Anderson**, **W0XI**, the president of Kantronics, the company which invented G-TOR, he said that all the other manufacturers had been offered licences at what he said was a very reasonable cost.

But obviously their timetables are something that only they can determine.

We do know that MFJ and AEA are both looking into the possibility of implementing G-TOR but neither has made any announcements yet.

### More *FAST* equipment

Hard on the heels of the recent announcements by Icom comes news from **Kenwood** that its new offerings, the **TM-255** and **TM-455** — among others — will be released in this country in the next few months and will have 9600bps packet interfaces.

**Kantronics** has announced the release of a new member of the KPC family of controllers to join the immensely popular KPC-3.

The new TNC, known as the **KPC-9612** should appear in Australia in July or August. It is a dual port 9600bps and 1200bps unit which can work either a single radio (sharing the two baud rates on one channel), or through two separate radios.

Rumor has it that we should see this product for between $550 and $600 here in VK land.

### Packet etiquette

In last month's ARA our occasional legal commentator *Judicious Rex* commented on the legal implications for amateurs relating to libel and such matters.

During the month a few people have contacted me asking what the situation is, as I understand it, in regard to the censoring of packet messages.

During the last week or so I have spoken to two very senior lawyers with experience in communications law.

Their suggestion is that *every* BBS operator should check *every* message they allow to pass out of their system and that they should remove any message they feel uncomfortable about.

As Rex said last month, even if you are not aware that a defamatory message may have passed through your system, you are still affected by its passage and you *do* become responsible for it.

By the same token, those who have messages censored by the BBS sysops should stop 'flaming' them with abusive messages.

They are only protecting themselves and the interests of the remainder of the packet community. No operator of any part of the packet system is required to carry traffic for any other amateur.

He does so only in a voluntary capacity and his unwillingness to handle any message, I am advised, is not a breach of any implied contract.

### Something to play with...

If you live in Melbourne try connecting to **VK3AQ** on 144.850MHz.

This little packet station in Hawthorn uses a Kantronics WeatherNODE, a telemetry system, to give information on the current weather conditions in that part of town.

A help file is available on that machine or you may connect to VK3ACR on the same frequency for more detailed information.

### PLANNING A PACKET NETWORK
### Part 2...

Last month we took a look at what we might expect a packet network to actually *do* for us as amateurs.

We explored the variety of tasks we might expect it to perform and discussed a little of what might be expected of the system into the future. But how do we go about implementing a system?

First we must decide upon a basic strategy, of which there are two:

1...Limited numbers of general coverage high sites or

2...Many small 'cell-type' sites.

Our present network is built around high sites.

A limited number of network access points are placed on the top of high buildings or even higher mountains. This limited number of facilities spends much of its time being overloaded by traffic with which it need not realistically concern itself.

This type of site is often expensive to get equipment onto, difficult to access and not conducive to the sort of flexibility that will be needed to address the needs of the future.

A typical high site system presently consists of nothing more than a number of TNCs and radios — one TNC and radio for each user access port and one for each backbone link.

The TNCs are usually all running NET/ROM or ROSE, or something similar, and have a very limited capacity to do anything of any consequence.

Two possible ways exist to improve high site packet systems.

Firstly we could do away with them altogether, or alternatively we could start to use a system of regenerative full duplex repeaters.

### Regenerative repeaters

Let's look at the second alternative first. A regenerative repeater is just like a voice repeater. It uses two channels and everything that comes in on the input frequency is repeated on the output frequency.

This allows every station within the range of the repeater to know that someone, whether they can hear them or not, is using the input and so they should not transmit.

This simple mechanism can eliminate the 'hidden transmitter' problem which plagues simplex AX.25 packet very easily.

Even more important, we need no new equipment to do it!

Any standard voice repeater could be adapted for this use and standard AX.25 TNCs already have the capability of timing control necessary to interface to even the most rudimentary of regenerative repeaters.

An existing voice repeater can be used immediately for 1200bps or 2400bps operation in this fashion with no changes at all.

So why don't we use this technique? Well, it is a little more expensive than a simple packet digipeater station. Just like a voice repeater, it requires moderately expensive cavity diplexers in order to separate the transmitter and receiver signals.

But as I have said, balance that against the fact that you overcome one of the most limiting influences on any congested AX.25 frequency, then this scheme does have its merits. In fact, many commercial packet systems use exactly this technique, so that the repeaters are still available for voice operation should that be necessary and in isolated areas only one repeater need be used for both voice and data.

Think about it, it can work and it can work very well indeed...

### Cell Site Systems

The other alternative is to get rid of the high sites altogether, a particularly appealing notion around Melbourne and Sydney at least.

Problems such as the hidden transmitter problem reduce the effective capacity of a radio channel to way below its theoretical maximum.

But if we moved the high site equipment to low sites and reduced both the power and antenna performance, then everybody using that cell site would be able to hear everybody else.

In this way the hidden transmitter problem disappears and the number of users per network access node is decreased and so the overall throughput rises.

Frequencies could be re-used, say on opposites of a metropolis.

Thus we could use eight frequencies three times around Melbourne or Sydney to provide 24 or more access points to the network.

Of course this assumes that users will adopt the appropriate etiquette and keep to low power output and low gain antenna systems to allow the system to work properly.

Individual 'cell' sites could be connected together in a 'spider web' fashion using 9600bps or faster equipment which would permit easy movement of traffic around the system.

But one of the greatest attractions to me is the fact that these systems could be hosted by individual amateurs at their homes.

This would mean that the equipment could be much less expensive and more readily accessed for repairs and improvements.

Such a system could also permit the use of small PCs at the system sites to provide more and better services, something which cannot be done with the present high site based system.

Well, that should do for this month. Until next time, happy packeteering!

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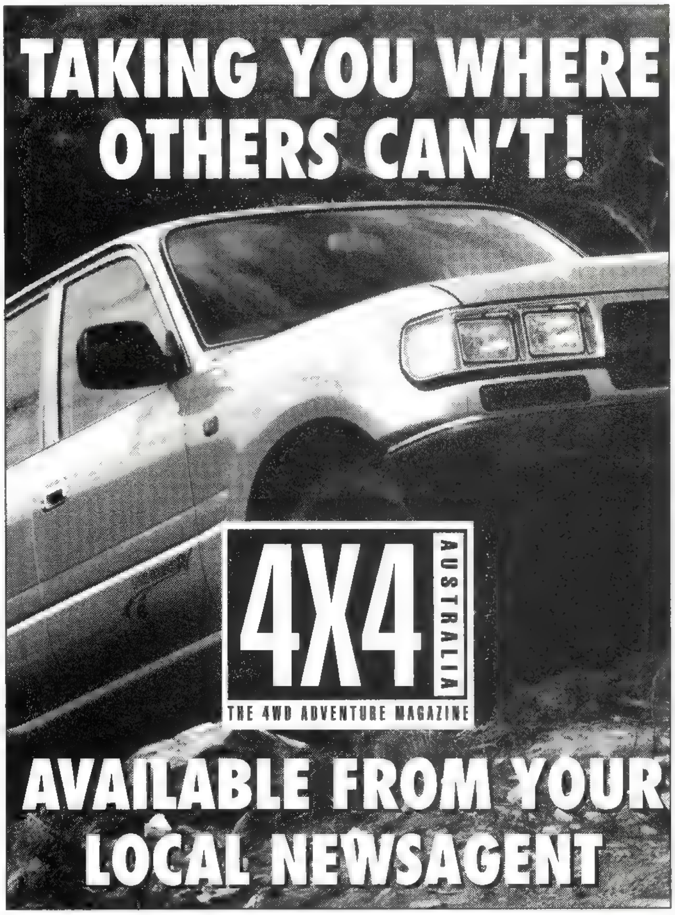
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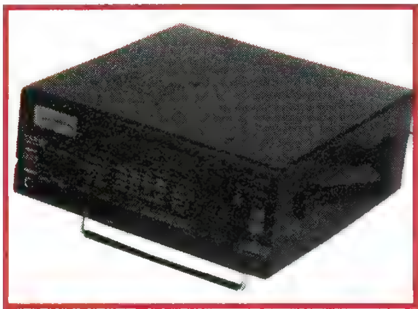

# SHORTWAVE LISTENING

**Compiled by Craig Seager**
12 Pellion Place, Bathurst, NSW 2795

**All times are expressed in Co-ordinated Universal Time (UTC or 'z'). Add 10 hours for Eastern Standard Time, 9.5 hours for Central Standard Time, eight hours for Western Standard Time or 12 hours for New Zealand Standard Time.**

## AFRICA ON A SHOESTRING

A colleague of mine recently returned from a five-month tour of Africa, and has caused me to turn pea-green with envy by relating a host of interesting facts and anecdotes gathered whilst sojourning in such exotic locations as Uganda, the Seychelles, Tanzania and Zanzibar.

For the moment, I'll not be able to experience the dark continent first hand, but like anyone with a shortwave set, I am able to do the next best thing: tour Africa via the airwaves. The main plus about this type of 'trip' is the cost, which is next to nothing, and one doesn't have to desert the familiar comforts of home sweet home!

Australia is not really ideally placed for reception of African stations, but happily we are now at the time of year when these signals are at their best, and the current low sunspot count is certainly conducive to what promises to be the best African season for some years.

The African shortwave scene is somewhat different to the hustle and bustle of mainstream international broadcasting. For a start, most stations target a local audience only, and can be found mostly on the so-called 'tropical' bands of 90, 75 and 60 metres. This is the primary reason for the seasonal nature of African reception from the Pacific region, and also restricts the time of day when the wanted signals are available. As we have said before in these pages, the two best times are during our early mornings, from 1600-2300z and, for the eastern states only, also from 0600-0700z. Mornings are by far the best, and present the greatest range of stations, with the minimum of RF pollution and other distractions.

Language can be a problem, but one of the few happy results of a colonial past is that many countries use English or French as major national languages, though often with a local accent.

As for those that don't, we'll just have to be satisfied with soaking up a bit of rhythmic musical fare, or perhaps some talking drums.

So, where to begin? Perhaps an abbreviated alphabetical listing of what's available is the best way to conduct our 'tour':

### Angola

Also a user of the higher international bands, **Radio Nacional** in Luanda is perhaps best heard on 9720 kHz, peaking at 0600z. Morning chances are 3355 and 3378 kHz, around 2030 kHz. Portuguese is the main language.

### Benin

The capital city of Cotonou is heard on 4870 kHz, good in French at the weekend sign-on of 0600z (earlier on weekdays), and also at 2100z. The regional station at Parakou does battle with the ABC station at Katherine NT, with which it shares 5025 kHz.

### Botswana

Try for **Radio Botswana** on 4830 kHz prior to 2200z sign-off. Some English featured.

### Burkina Faso

**Radio TV Burkina** in Ouagadougou is on 4815 kHz from 0530z, and mornings 2130z.

### Cameroon

The regional station at Garoua is the best chance, when active, on 5010 kHz, any time after 1800z. Yaounde, the capital, is on interference-ridden 4850 kHz.

### Central African Republic

Bangui uses 5034 kHz, with French programming 'til 2300z.

### Chad

**Radiodiffusion Nationale Tchadienne** is on 4904 kHz 'til 2200z, and also on the daytime frequency 7120 kHz 'til 1600z.

### Congo

One of the stronger African signals comes from this former Belgian colony, 4765 kHz is best, often 'til past 2300z and again at 0530z.

### Equatorial Guinea

Try for Bata on 4926 or 5004 kHz, or Malabo on 6250 kHz. Both in Spanish 'til 2200z.

### Gabon

The super-power commercial operation, **Africa No 1** is on 9580 kHz in French from 0500z, though a change to a lower frequency has been mooted. The national service from Libreville uses 4777 kHz, but mixes with Jakarta, Indonesia 'til past 2200z.

### Ghana

One of the easier ones in the afternoons, from 0530z fade-in on 4915, and if you're lucky, 3366 kHz. Also mornings 'til 2300z.

### Kenya

Another easy one, and uses quite a bit of English. Try 4885/4915/6150 kHz 'til just after 2100z.

### Lesotho

Maseru has English and Sesotho on 4800 kHz 'til 2100z.

### Liberia

A reasonable challenge for eastern state listeners on 4760 kHz at 0630z. This is the religious station **ELWA**.

### Malawi

The **Malawi Broadcasting Corporation** is interesting listening at present, after the recent loss of the country's nonagenarian president. Listen on 3380 kHz prior to 2130z (in English).

### Mali

French and Vernaculars from Bamako are on 4783, 4835 and 5995 from 0600z and at 2000z.

### Mauritania

Check for Nouakchott on 4845 kHz from 0630z sign-on and prior to 2330z. In French, Arabic, and local dialects.

### Nigeria

The regional station at Kaduna on 4770 kHz is fairly easy, from 0530z and after 1700z. Lagos is on 4990 kHz, best at 2100z. The external service is strongest of all, in English on 7255 kHz from 0500-0700z.

### Rwanda

Currently off shortwave, except for the rebel station, a difficult proposition on 6285 kHz prior to 1900z.

### South Africa

There is an extensive external service from Johannesburg, though local transmitters uses such frequencies as 3230, 3320 and 4810 kHz (adjusted periodically). Available mornings only.

### Tanzania

A high-powered transmitter from the capital, Dar Es Salaam, operates on 5050 kHz, and is noted 'til 2100z sign-off. English and Swahili.

### Togo

Try for Lome on 5047 kHz at from 0530z, and also at 2100z. Mainly in French.

### Uganda

Two parallel outlets operate from

....☞

Kampala, 4976 and 5026 kHz. Both sign-off at 2100z, and have a good smattering of English.

### *Zambia*

**Radio One** from Lusaka uses 4910 kHz 'til 2200 sign-off, but is mainly in local dialects, except for English news. The English service is a chance on 7234 kHz at the same time.

The above list is far from comprehensive, but should serve as a reasonable introduction. Even those countries featured have more frequencies, times and languages to offer, but this summary should provide sufficient for anyone wishing to explore this most interesting part of the globe.

### RVI FREQUENCY CHANGE

**Radio Vlaanderen International**, Belgium's external service, has announced a mid-season frequency change for its morning broadcast to Africa. The new channel is 17,595 kHz, which replaces adjacent 17,590 kHz, Monday to Saturday 0900-1130z and Sundays 0700-1130z. This includes English (Monday to Saturday) 0900-0925z. Parallel frequencies remain 6035 and 13,690 kHz.

### NEW US STATION PLANNED

On the Fidonet Shortwave Echo, *George Thurman* reports that the US Federal Communications Commission (FCC) has issued a construction permit for a new shortwave station in McCaysville, Georgia. The station will use 50 kW compatible single-sideband, feeding a rotatable antenna directed to Canada (30 degrees) and Mexico (238 & 250 degrees).

No further details or target on-air date are available, however the FCC usually allows one year for construction subsequent to a permit being issued.

The licensee is one Rosanne Frantz of Woodstock, Georgia, however I strongly suspect that this will be yet another evangelical operation.

### CHINESE JAMMING TO REDUCE

Most users of the shortwave spectrum share the common dream that jamming, ie deliberate interference to the signal of certain broadcasters, will one day be relegated to the history books. According to **Voice of America** news reports, we are now one step closer to this ideal becoming reality due to China agreeing to cease jamming of the VOA's Chinese language broadcasts.

The level of Chinese jamming tends to rise and fall with the political climate, interference with the VOA's signal having originally ended in 1979 upon US official recognition of the People's Republic. The hiatus concluded in 1989, however, with the folk in Beijing keen to prevent their populace from hearing Western news reports of the Tianamen Square massacre and has been an integral part of the somewhat frostier relationship between the two nations in the ensuing years.

The trigger for the latest turnaround is a set of seven demands listed by the Clinton administration in return for the renewal of China's 'most favored trading nation' status, the cessation of jamming being one of these. A team of US technicians is now set to visit China to discuss the imminent halt to this menace to the VOA's signal in Asia.

Historically, jamming has not been the exclusive province of the Chinese authorities: The former Soviet Union was one of the main protagonists on the world jamming stage, maintaining a legion of high-powered transmitters specifically for the purpose of drowning out programming from such stations as **Radio Liberty**, **Radio Free Europe**, the **VOA** and the **BBC**.

The coming of Glasnost and the dissolution of the USSR put an end to this practice, which was at its greatest level during the height of the Cold War. The earlier jamming transmitters have now been put to more congenial uses, including increasing the output capacity of governmental broadcasters in the Commonwealth of Independent States. Ironically, some are even hired out to the Western broadcasters they once jammed, for relay purposes, as well as to the once unheard-of independent stations that now proliferate in Russia.

The actual jamming signal can take many forms, whether it be simple 'white noise', wailing sirens, legitimate program tapes played backwards or the infamous 'bubble jamming'.

On a smaller scale it is practised by certain Middle Eastern Countries, in Latin America, by North Korea, and will no doubt continue from China against selected broadcasters such as the BBC and certain religious stations.

### NADEZHDA SCHEDULE

Russian independent station **Radio Nadezhda** is operated by women's interest groups, and has this schedule:

**To Western Europe**
**1900-2300z** 1215, 6015, 11,985, 15,340 kHz

**To Eastern Europe**
**0200-0600z** 5915, 6015, 7140, 9730 kHz
**0600-1000z** 5915, 7140, 9730, 9725, 11,965, 11,665 kHz
**1200-1400z** 5915, 9730, 9725, 9490, 11,665 kHz
**1400-1900z** 6015, 9490, 9725, 11,985, 11,885, 15,340, 17,675 kHz

**To Asia**
**0300-0600z** 9490, 9725 kHz
**0600-1000z** 9490, 9725, 11,665, 15,230, 17,560 kHz
**1000-1400z** 9490, 15,230 kHz
**1400-1900z** 5935, 9490, 9725, 11,705 kHz

**To the Far East**
**0300-0600z** 5925, 11,740, 11,805, 11,670 kHz
**0600-1000z** 630, 5935, 9635, 11,805, 11,740, 11,670, 15,120 kHz
**1000-1400z** 5935, 9725, 7420, 11,740, 9590, 11,705, 11,665, 15230 kHz

All programming is in Russian.

This schedule courtesy of *Alexander Ageenkov*, via the Usenet conference.

### CID STATION SUSPENDED

Political clandestine station **La Voz del CID** has suspended transmissions on shortwave, reportedly due to financial difficulties. The station has for many years been a feature of the bands, operated by an organisation called **Cuba Independiente y Democratica**, and beaming an anti-Castro message into Cuba.

Programming was originally broadcast via stations such as **Ecos del Torbes** in Venezuela and the Dominican Republic's **Radio Clarin**, however La Voz del CID acquired exclusive access to transmitters somewhere in Central America a few years ago and was frequently heard in Australia until recently on such frequencies as 6305 and 9942 kHz, using the slogan '**Radio Camilio Cienfuegos**'.

A QSL card in my archives from 1984 for 10,041 kHz also lists other CID operations at that time: '**Radio Antonio Guiteras**' 7355 kHz, '**Radio Ignacio Agramonte**' 5106 kHz, '**Radio Frank Pais**' 7400 kHz and '**Radio Jose Antonio Echeverria**' 7465 kHz.

The major funding source for La Voz del CID has long been rumored to be the CIA, though not surprisingly there has been no official confirmation of this, and it is widely thought that recent withdrawal of such funding has resulted in the station's present plight.

According to *Jeff White* of Miami, reporting to the 'Media Network' program, La Voz del CID has been appealing publicly for donations and hopes to return to the airwaves; it remains to be seen whether this can be achieved without the benefit of some sort of ongoing grant from a sympathetic government.

### NORTH KOREA

The North Korean government is certainly in the news these days, though we hear very little of its viewpoint on the nuclear question, except as assumed and reconveyed by the West. Accordingly, some may care to tune into **Radio Pyongyang** for quite a different slant on things; the latest schedule for English reads:

**To South East Asia**
**0400-0450z** 15,180, 15,230, 17,765 kHz
**0600-0650z** 15,180, 15,230 kHz
**0700-0750z** 15,340, 17,765 kHz
**0800-0850z** 15,180, 15,230 kH

*Compiled by Craig Seager*
**12 Pellion Place, Bathurst, NSW 2795**

**1300-1350z** 9640, 13,760, 15,230 kHz

To the Middle East and Africa
**1500-1550**, **1700-1750** and **2000-2050z**, all on 9640 and 9977 kHz

**To Europe**
**1300-1350z** 9345, 11,740 kHz
**1500-1550** and **1700-1750z** 9325, 13,785 kHz
**2000-2050z** 6576, 9345 kHz

**To the Americas**
**2300-2350z** 11,700, 13,650 kHz
**0000-0050z** 11,335, 13,760, 15,130 kHz
**1100-1150z** 6576, 9977, 11,335 kHz
**1300-1350z** 13,760, 15,230 kHz

### FAMILY RADIO NEWS

Religious broadcaster **WYFR** in Florida has advised this schedule for English programming, effective until September 24:

**To North America**
**0000-0100z** 6085 kHz
**0100-0300z** 6065, 9505, 15,440 kHz
**0300-0500z** 6065, 9505 kHz
**0500-0700z** 5985 kHz
**1000-1100z** 5950 kHz
**1100-1200z** 5950, 11,830 kHz
**1200-1300z** 5950, 6015, 11,830, 17,750 kHz
**1300-1400z** 5950, 6015, 11,830, 13,695, 17,750 kHz
**1400-1500z** 6015, 11,830, 17,750 kHz
**1500-1700z** 11,830, 11,705, 17,750 kHz

**To Europe and Africa**
**0500-0600z** 9870, 11,580 kHz
**0600-0800z** 7355, 11,770, 13,695 kHz
**1600-1700z** 15,355, 21,525, 21,615 kHz
**1700-1900z** 21,500 kHz
**1900-2000z** 15,355, 21,615 kHz
**2000-2200z** 15,355, 15566, 17,612.5, 21,525, 21,615 kHz
**2200-2300z** 17,612.5, 21,525 kHz

**To India**
**1302-1502z** 11,550 kHz

According to a report some weeks ago on *World of Radio*, Dr Harold Camping, head of **Family Radio**, has predicted that the world will end on September 27, 1994. A date to mark on your calendars, folks!

### ODDS AND SODS...

Some brief news items and topical loggings:

• The **NBC** in Port Moresby continues to switch between 9675 and the older 4890 kHz for its Karai service in English. As at the time of writing the 31 metre channel seems the most favored, but it's worth trying either within the scheduled hours of 1900-1400z.

• **KWHR** on Hawaii is now using the new frequency of 17,780 kHz from 0400-0800z, replacing 17,510 kHz. This includes the *World of Radio* segment at 0600z on Saturday and Sunday, as well as the station's own *DX Radio Show* on Mondays at 0400z.

• **Radio Republik Indonesia** now boasts a new regional outlet, which has been widely heard on 5984.3 kHz. First reported by Indonesian DXpert *David Foster*, the location is said to be Tual in Southern Maluku, with reception observed from 0900 to 1410z sign-off. This item courtesy of the specialist newsletter *OZDX*.

• **Radio Miami International** (**WRMI**) has, according to owner *Jeff White*, overcome its harmonic problem with the installation of some filters, and is no longer causing interference problems to airport traffic. Accordingly, tests have again commenced with 50kW on 9955 kHz, and the suggested time for reception in Australia is 1200z.

• New Zealand pirate operation **Kiwi Radio** receives far more publicity than its importance justifies, however for those keen to pursue this type of broadcaster, the best time to look appears to be weekends between 0600 and 1100z on either 7445 or 7455 kHz USB. Programming from other pirate stations is sometimes featured.

• The best chance to hear Mexico on shortwave these days is **Radio Educacion**, which operates on the (mostly) clear channel of 6185 kHz. Reception is best around 0600z, and English identification announcements and station details are frequently given. Not too many months ago, one was lucky to even catch a Spanish identification from Radio Educacion, at least in the hours it is audible in Australia.

• Audible once again has been the rare **NBC** daytime outlet at Alotau (Papua New Guinea), which has been noted several days at around 0000z, running in parallel with the much stronger 9675 kHz. Perhaps this is an easier one in more northerly parts of the continent, but is still considered rare fish in the south, despite the relative close proximity of the transmitter.

• Speaking of Papua New Guinea, a Peruvian station hitherto unheard in these parts has become available on 4890 kHz on days when the Port Moresby station is up on 31 metres. **Radio Chota** is located in the town of the same name, and provides reasonable signals at 1200z.

• The Romanian home service program known as **Radio Actualitata** is relayed on shortwave these days, though the 41 metre band outlet appears subject to some drift. Nominally 7225 kHz, a few weeks ago Bucharest was heard on 7228 kHz, and latterly on 7224.6 kHz. Reception was at 0400z.

It is interesting to note that the sometimes-criticised selectivity characteristics of the Yaesu FRG-100 do not prevent it from satisfactorily separating the Romanian on 7224.6 from the stronger **Radio Deutsche Welle** on 7225 kHz exactly, when making judicious use of the LSB and USB modes.

Not a bad test to pass, methinks!

• Despite being one of the world's major international broadcasters, **Radio France International** has never really attempted to service the English-speaking world in anything approaching a comprehensive manner. **RFI** does, however, condescend to providing two daily hour-long transmissions in English, the first of which is nicely timed for this part of the world, even if it is not intended to be so. This is at 1200z, and the latest announced frequencies are: 15,195, 15,155, 13,640, 13,625 and 9805 kHz, beamed to Europe and North America, and 15,325 kHz for Africa. Reception quality is, unfortunately, highly variable.

### WEWN UPDATE

**WEWN** in Birmingham, Alabama, has made some changes recently, including the deletion of language segments in Japanese and Korean. It may be opportune to catch up with the station's current English output:

**Transmitter A**
0000-0200z 7425 kHz, 0300-0800z 7425 kHz, 0800-1600z 9350 kHz, 1600-0000z 13,615 kHz.
**Transmitter B**
0100-0200z 9985 kHz (Spanish and English) 0800-0900z 7425 kHz, 1200-1300z 9985 kHz, 1800-1900z 18,930 kHz (Spanish and English).
**Transmitter C**
0000-0100z 9410 kHz, 0800-1000z 12,160 kHz, 1000-1200z 9370 kHz, 1500-1600z 17,510 kHz, 1600-1900z 15,695 kHz, 2300-0000z 9985 kHz.

The only remaining services for Asia appear to be English 1000-1200z on 9370 kHz, and Mandarin Chinese from 1300-1400z on 13,710 kHz.

This news from *Ludo Maes* of Belgium.

### YEMEN

Those itching to hear about the latest developments in the Yemeni civil war from the protagonists themselves may well be disappointed. The only English broadcast comes from Aden in the south, and is scheduled at the difficult time of 1600-1630z and on the difficult frequencies of 5970 and 7190 kHz.

There used to be a repeat at 2100z on 9780 kHz via Sana'a in the north, but this was discontinued at the commencement of hostilities for obvious reasons. The latter city may still be heard, but only in Arabic, until past 2130z.

Beware Abu Dhabi, in the United Arab Emirates, which has also been known to use 9780 kHz in a similar time period.

In addition to contributing **Amateur Radio Action**'s shortwave notes, **Craig Seager** is a life member of the **Australian Radio DX Club**.

# amateur radio action

Readers of **Amateur Radio Action** may use the **ARA CLASSIFIEDS** column to the extent of 25 words absolutely free! This offer applies only to private "For Sale" or "Wanted" classified listings, and to computers, software or computer peripherals with an amateur application. A **limit of one classified** advertisement applies to each advertiser. Any additional words **must be paid for or the advertisement will not be accepted.**

A nominal fee of $4 per additional 25 words or part thereof will apply. This fee should accompany your material. Please enclose this fee or your advertisement will not appear. Preference is given to paid advertisements, and we receive an awful lot of them each month.

Your advertisement's inclusion **cannot be guaranteed**, but every effort will be made to place your advertisement in the issue following receipt of copy. The 25 words must include your name, callsign and phone number.

The publisher reserves the right to amend or reject any advertising material considered unsuitable for publication.

No correspondence will be entered into.

Repeat **ARA CLASSIFIEDS** advertisements will be accepted for a fee of $4 for every 25 words - including the first 25.

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Free advertisements for **commercial goods or services** will not be accepted for publication in these classifieds pages. Instead, special rates apply for commercial advertising material which appears in the display pages of Amateur Radio Action.

For details of display advertising phone Ian Dale on (03) 601 4209

Readers should note that all advertisements are required to comply with the provisions of the Victorian Consumer Affairs Act of 1972. They should be aware that, under the above Act, Post Office box numbers can be published **only if the full name and residential address** of the box holder is supplied with the advertising material.

This form is to be used for all classified advertising material in **Amateur Radio Action**. Letters on plain paper requesting the insertion of a classified advertisement will not be accepted. Photocopy or clip this form and post it complete to:

**Amateur Radio Action Classifieds**
**GPO Box 628E**
**Melbourne 3001**

**IMPORTANT NOTICE:** Unsuitable material includes unsigned advertisements for wanted amateur transmitting equipment where no call sign is shown, sale equipment modified for general coverage transmit, non-amateur transmitting equipment (including CBs) or equipment modified for use on CB, marine or other non-amateur bands.

You may fax your classified to (03) 670 9096 only if under 25 words

**Next issue's deadline:** *11 July*

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# ...CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

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***The onus is on you...***

## VK2 AREA

- **Ameritron** HF linear amp, as new, 800W output, little used, VGC $1100. **Transceiver**: High Gain 5, converted to 10M $80. Charles, VK2GMT (02) 521 2637. Licensed amateurs only.
- **ATN** log-periodic antenna, 10M thru 20M continuous. Strengthened boom, better than new $800. This is mounted on heavy-duty **Create** rotator, as new $400. Yes, *that's* on a 50 ft **Hills** galvanised telescopic and tilt mast, also better than new $600 *or* the lot for $1600. Come and see it, and try it before it's dismantled. Brian, VK2BCS (046) 55 2017
- **Hustler** 5-band vert antenna as new $195. **Uniden** PRO-810E xcvr base station, suit 10M conv, as new in orig pack $250. Cyril, VK2KVJ (02) 525 0134
- **IBM** PC/XT compatible, new 20MB hard disk, 2 disk drives, Herc graphic card, monitor for Packet $250. Brad, VK2KQH (02) 906 5855 B/H, (018) 64 0377 A/H
- **Icom** IC-737A HF xcvr, *new* in carton, $2495 with full warr from Icom. **Tokyo Hy-Power** 500 HF ATU $250. **Kenwood** AT-230 HF ATU, covers WARC bands and has owners manual $325. Patricia, VK2SUS (075) 24 7022. TLAO
- **Icom** IC-740 HF xcvr. A few years old, but virtually unused, absolutely pristine in original packing $900. **Icom** AH-2a auto ATU, suit IC-735 or earlier models with CI-V interface or 24-pin accessory socket. New in carton $500. Bill, VK2FKE (043) 43 2339. Transmitting gear sold to licensed amateurs only.
- **Kenwood clearout!** Kenwood TS-930S top-shelf HF xcvr $2200. Kenwood TS-680S HF + 6M mobile — a highly sought-after rig, had little use $1800. Kenwood TS-430S HF xcvr, also had little use $1200. All with cartons, hndbks, accessories. Offers invited. Ted, VK2ABW (063) 37 1219. LAO
- **Kenwood** TS-130S HF xcvr, VGC $650. Jack, VK2NPX (02) 524 5937. LAO
- **Kenwood** TS-440S HF xcvr, with inbuilt ATU, PS-50 pwr supp, ext spkr, MC-80 desk mic, manuals, coax $1300. **Icom** IC-28H 2M mobile FM xcvr with pwr supply for base use $200. Both with orig ctns. Al, VK2DAM (069) 53 3756. LAO
- **Kenwood** TS-450S/AT HF xcvr as new in carton $2500 with 1 yr warr. **Kenwood** AT-230 ATU $325. **Yaesu** FP-757HD pwr supp $450. James, VK2JO (02) 622 6268. TLAO
- **Sony** ICF-200ID comms rcvr — the best portable ever made — in brand new cond with pwr supply & manuals. $600. George (02) 642 8970
- **Test gear**: Revex power SWR meter 140-525MHz $90. Audio oscillator 18Hz-500KHz $80. Sweep generator $30. Dual output transformers 24V 13V $5. Jack, (02) 667 3297 after 8pm.
- **Tower** 60' galvanised disassembled with haser, winch, HD tripod. Will sell *or* swap for mobile HF rig with 0-30MHz rx. Robert, VK2TAX. Ph/fax (066) 72 1561, (018) 66 2909.
- *Two* **Hills** 50ft extendable towers. VGC $600 ea. John, VK2ZD (047) 35 6054
- **Wanted**: B-Mac satellite rcvr. Peter VK2GVQ (066) 57 2700 (066) 57 8003
- **Wanted**: Circuit & specs for Hallicrafters 5X-146 comms rcvr for restoration, photocopy okay. Raul (02) 820 7763
- **Wanted**: Early crystal set radios using cats whisker in timber cabinets or other, plus parts, any cond. **Also** IC-22S in GC. Ken, VK2SX (02) 413 1846 anytime.
- **Wanted**: Kenwood TM-731A 2M FM xcvr, ATU 150W min and Kenwood TS-440S HF xcvr in VGC. Paul, VK2NPH (049) 33 5995
- **Wanted**: Kenwood TS-440. Jack, VK2NPX (02) 524 5937
- **Wanted**: VHF high-band commercial base station xcvr with at least 50 watts output. Xtals okay — Phillips 815 would be ideal. Frustrated ex-QRPer! Alex, VK2GEO 015 27 9414
- **Wanted**: Workshop manual for TS-440S — photocopy okay. **Also** valves, four 6KD6 wanted; must be in VGC. Steve, VK2MSD (049) 66 2264
- **Wanted**: Yaesu FT-1000 or Kenwood TS-950S. Alex, VK2ALX (02) 907 9073
- **Yaesu** FRG-8800 with VHF converter $550. Simon (043) 25 1080
- **Yaesu** FT-77 HF xcvr with WARC bands $500. **Yaesu** FL-2100Z HF linear $925 with spare 572Bs. **Yaesu** FC-707 ATU $225 in GC. Buyer to collect or freight. John, VK2AVE (042) 94 8060. TLAO
- **Yaesu** FT-ONE HF xcvr. Has built-in auto keyer, AM filter, and full workshop manual. Gen cov rx $950. Chris, VK2ISB (02) 550 0495. Licensed amateurs only.

**Deceased Estate VK2WCL:**

- **Yaesu** FT-767GX MkII HF xcvr with 6M, 2M & 70cm modules. EC $2950 with box and manuals. Jim, VK2XJX (02) 416 1864. Licensed amateurs only.

## WEATHER FAX PROGRAMS

**RADFAX2** is a high resolution shortwave weather fax receiving, displaying & printing program for the IBM XT or AT computer with a CGA, EGA, VGA or Hercules card (please state which). Programs are $35 each plus $3 postage, and are supplied on 5.25" or 3.5" disk (please state which) plus full documentation. Programs are available only from: M Delahunty, 42 Villiers St, New Farm, Queensland 4005. Phone (07) 358 2785

Also **SATFAX** vers 5.0, (EGA & VGA) $45, & **MAXISAT** ver2.1 (1024X768X16/256 SVGA) $75 which are weather satellite picture receiving & displaying programs — add $3 P&H.

## VK3 AREA

- **Brainer** GST-1 base antenna for 2M & 70cm. 6/8.3 dB gain, in brand new perf cond. Cost $199, sell $125. Paul, VK3DA (ex-VK3EPD) (059) 83 1771
- Computer **Compaq** 386SX Deskpro $1200. Printer **IBM** $150. Digital freq unit $80. **Lesson** pwr mic $70. **Lotus** 1.2.3 V2.2 5.25" disks, new $120. Also: Framco armchair $60. Turner Plus 3 base mic $70. Bob, VK3SX (03) 314 6470
- **GVC** 14,400bps modem: V32BIS, V42BIS, V42MNP, group three fax, Hayes compatible, comes with registered software & help with setup $300. Peter, VK3TQ (03) 364 8663, (018) 17 2153
- **Icom** IC-275A VHF xcvr all-mode 30W O/P built-in AC supp EC $1400. **Icom** IC-735 HF xcvr, all-mode EC $1700. **Icom** AT-150 auto ATU for IC-735 $790. **Icom** PC-55 p/s matches IC-735 $390. **Palomar** solid state mobile linear 1.8-30MHz 300W SSB $300. Two 55W **solar panels** $400ea, regulator $70, offers considered. Peter, VK3YF (058) 21 6070. TLAO
- **Icom** IC-729 100 watt HF + six metre xcvr with gen cov rcvr (0 to 33 MHz and 46 to 61.1 MHz). In absolutely brand new cond with mic, pwr cable, used only twice, plus matching **Icom** IC-PS15 matching 20A pwr supp (switched by xcvr). With mic, all books & boxes etc. New cost together around $2800. Sell $2000 or cons fair offer. Current model, suit fastidious new buyer. **Yaesu** FT-415 2M FM HT, new, unused. In box with 1000mAH NiCd, carry case, belt clip, wrist strap, manual, antenna etc. New cost $600, sell $400 or cons fair offer. Deceased estate. Spouse keen to sell. (018) 54 0154. Licensed amateurs only.
- **Icom** IC-R9000 top comms rcvr. Covers 100kHz to 2GHz cont. $7000, no offers. **Also** 20 metres of LDF-450 Heliax (no connectors) $100. Genuine inquiries only. Michael (03) 870 3236
- **Kenwood** TS-520S HF xcvr. GC, $400. **MFJ**-422BX & Bencher chrome paddle. Fully electronic keyer setup $200. Danny, VK3DNA (053) 34 2818. Transmitting gear sold to licensed amateurs only.
- **Motorola** Maxar-80 VHF hi-band 13.8V C4A p/s, FM-828 remote tuned on 2M with 147.250/147.850 xtals fitted, 2m end fed half wave $290 lot. Mark, VK3TCD (03) 305 2466. LAO
- **Phillips** SXR 5W 6ch HT fitted with 2M Xtals $50. **Phillips** FM-1680 converted to 6m $50. **Motorola** lowband M4X4R $40. **AWA** LB-RT80 $50. Greg Halley, VK3ZKV (03) 700 3578. LAO
- **Shack clear-out**: Kenwood TS-440S with filters, as new $1550. Yaesu FL-2100Z HF linear with 3pr 572Bs $1200. Solid state pwr supp 25A, unused $350. Kenwood PS-50 pwr supp EC$420. Patrick, VK3GEE (051) 99 2811. Transmitting gear sold to licensed amateurs only.
- **STC** 151 70-85MHz LB 25W 6CH ideal for 6M conv $10 each. **AWA** RT-80 LB 70-85MHz $50. **STC**-191 UHF remote with power supply $30. Tony, VK3ZOT (03) 728 5598
- **Wanted**: Icom IC-4E 70cm HT xcvr; **also** any dead battery packs ie BP8, BP5 or dry cell case. Bernard, VK3YTT (051) 35 5741 B/H, (051) 34 4275 A/H
- **Wanted**: Manuals, originals or photocopies for: ATU Leader LAC-895 & SWR/watt meter Leader LPM-885 & Sig-gen B&K 2050 & sig-gen MI TF2015 & BWD539 oscilloscope. Andy, VK3BEL (03) 358 1133/34
- **Wanted**: NiCd battery for FT-207R, or info on where to obtain one within Victoria. Ask for Barry after 4pm. (052) 78 6513
- **Wanted**: Yaesu FRV-8800 internal VHF converter with svce manual for Yaesu FRG-8800 rcvr. Harold, VK3CGW (051) 92 4223
- **Yaesu** FL-2100Z HF linear amp. Tubes mint cond, with dummy load, never used, was only turned on occasionally $950. Phone Ian (03) 532 1981 or (03) 596 6836. Licensed amateurs only.
- **Yaesu** FRG-7700 comms rcvr, near new $400. **Kenwood** desk mic MC-60 VGC $75. Andy, VK3BEL (03) 358 1133/34
- **Yaesu** FT-470 dual-band hand-held with NC-37 fast chrgr, three batt packs, soft case, manuals & boxes. Still under warranty $695. Ross, VK3SR (03) 353 3391 B/H. Licensed amateurs only.
- **Yaesu** FT-707 HF xcvr, FV-707 ext VFO, FC-700 ATU $900. **Tribeam** TA-33, with rotor HR-400 $500. Two **NEC** telephone televisions — SSTV down the phone lines — and yes, they work on Telecom lines! 3 page memory, $1200. Allan, VK3PA (054) 68 1088. TLAO
- **Yaesu** FT-747GX HF xcvr c/w FM option, mic, manual, circuit, orig box, VGC $850. **Codan** auto tune antenna, suit Codan 8525 1.8MHz-11MHz, will work any HF radio $500. **Jaybeam** 88-el 70cm beam $140. **Power supply** 25amp cont 40 amp peak c/w circuit, details

## QSL CARDS

QSL cards, white or colored, pre-printed or fully personalised with callsign, operator's name, QTH, station equipment, QSO panel, with or without logo, gloss or matte card. Top quality cards at best prices — 100 fully personalised cards for just $19.50.

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